

This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

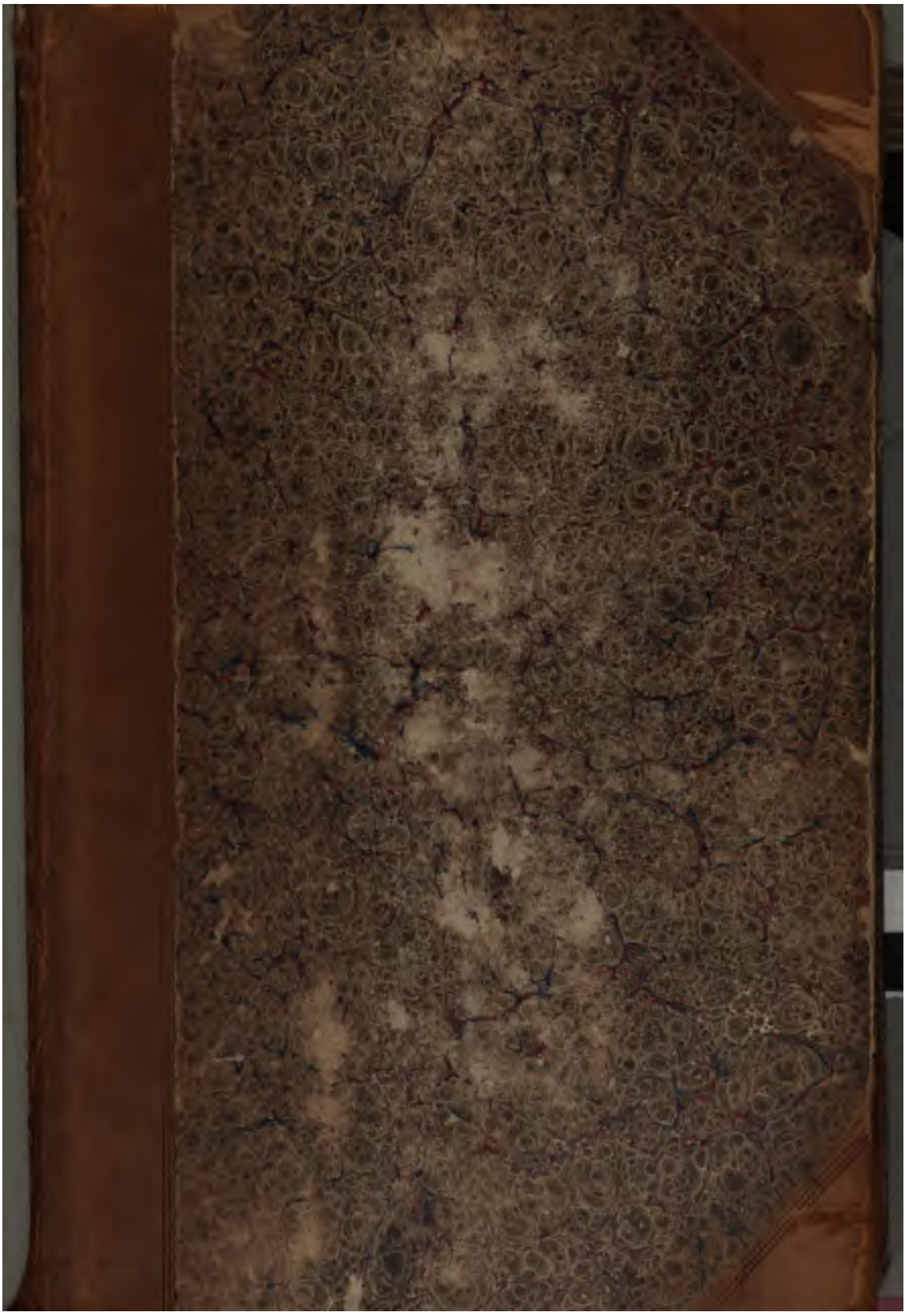
+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`



600047441Q

G.171. m. 28.



E. BIBL. RADCL.

156 e 142



A

SKETCH

OF THE

HISTORY AND CURE

OF

FEBRILE DISEASES;

MORE PARTICULARLY AS THEY APPEAR

IN THE

WEST-INDIES

AMONG THE SOLDIERS OF THE BRITISH ARMY.

BY ROBERT JACKSON, M. D.

Οι γαρ πνεοντες μεγαλα τους χρεισσους λογους
Πικρως φερουσι των ελασσονων ὑπο.

Euripid. Androm. l. 189.

STOCKTON:

PRINTED AND SOLD BY T. AND H. EELES;

SOLD ALSO BY

R. FENNER, PATERNOSTER ROW,
LONDON.

1817.

PREFACE.

THE cause which produced, and the purpose which is intended to be effected by the following work may be explained in a few words. The author, having collected a quantity of materials relative to febrile diseases in the course of a long and varied medical life, was impressed with the idea that he might be enabled, by analyzing those materials, to attain a principle capable of giving consistency to the history of fever through the whole extent of its circle, and also of establishing a basis on which may be founded a plan of proceeding for its cure—scientific and at the same time efficient. The object is important; the proper execution is difficult,—not within the reach of the author perhaps at any time—beyond it at an advanced age. But difficulty of execution,

great as it may be, is not the only obstacle which presents; for, if I were confident in ability and capable of labour as in the vigour of youth, the means of printing a work of the magnitude contemplated (for it could not be comprised in fewer than two quarto volumes) is not now, and in no probability will ever be under my command. The hopes therefore of analyzing, reducing into system, and submitting to public inspection the substance of the materials which are in my possession, cannot be any longer entertained by me; but, as the view which I have formed concerning fever is somewhat different from the common view, and as the manner, in which I act in combating its effects, appears to myself at least not to be unimportant, I could not be satisfied that I had discharged the duty of my station, if I did not, in some way or other, endeavour to give it publicity, believing, as I do, that if rightly understood and duly applied, it may tend to alleviate the extent of human misery, and even, in no inconsiderable degree, diminish the ordinary expenditure of human life.—Influenced by this impression, I sat down to put together, with a view to publication, the sum of my experience and observation concerning the

history and cure of febrile diseases as they appear among British military in the West-Indies. The principle on which I act I believe to be founded in truth. It has hitherto been only obscurely explained by me. I now venture to give a more distinct elucidation of its effect in practice,—in the hopes that the knowledge of it may be useful to mankind in times after the present.

I had no other intention, when I undertook the present work, than to give a very summary outline of the history and cure of fever. I find now, in looking at what I have done, that I have written a volume. The extension of the pages, arising chiefly from corroborative documents added to the text in support of opinions or practices which, without such evidence, would not perhaps obtain attention, has thus a cause of necessity; and, as the documents presented are given with as little waste of words as possible, the reader will not I trust consider them as irksome;—they are not superfluous. Fidelity, brevity, and as much precision as a defective logical capacity could give to the language are the objects which chiefly fixed attention in the composition of the work,—of the imperfections of which I am perfectly

aware. Besides omission of what may be necessary on some occasions to a proper understanding of the case, there are probably mistakes from inadvertence, unnecessary repetitions from forgetfulness of method, opinions arising from direct observation expressed abruptly or without deference to authorities, and, as such, liable to be considered as presumptuous; but with all these defects, and I am ready to admit their existence, nothing will, I believe, be found within the volume, which has a tendency to mislead those who study and seek to understand things as they actually are at the bed side of the sick. It has been my aim, whether I have attained it or not others must judge, to place the subject before the reader without technical disguise. I state the fact according to my best comprehension of it, leaving every one to exercise his own mind in forming judgment in the case. If sense and reason, divested of prejudice, do not bring to the reader evidence of the usefulness and truth of the suggestions which I offer, or of the practices which I recommend, I require nothing from him on the score of authority. I do in this case what I conceive to be right, and, having done so, I neither solicit praise

nor fear blame.—The sketch, though imperfect, is in some measure elementary. It is calculated for the younger members of the profession, particularly for those attached to public service,—intended to give a view of principle as the base of practice, for it is on the base of principle only that the acts of the physician are uniformly useful, or uniformly safe.

CONTENTS.

CHAPTER I.

PAGE.

Tropical Climate 1
Medical Topography 4
Forms of Disease from Locality 7
——— *Season* 9
——— *Circumstances of Subject* ... 12
——— *Epidemic Influence* 13
Question of Contagion or Non-contagion 19

CHAPTER II.

Temperament 36
——— *Sanguine* 37
——— *Phlegmatic* 38
——— *Serous* 40
——— *Nervous or Sentient* 41
——— *Gangrenous, &c.* ... ... *ib.*

CHAPTER III.

Description of Fever 44

SECTION I.

Description of Fever in the Sanguine Temperament ... *ib.*
——— 1. *Mild in Degree* 45
——— 2. *Aggravated* 48

PAGE.

Dissection of the Dead Body 60
Cases of Illustration 66

SECTION II.

Description of Fever in the Gangrenous Temperament ... 69
——————————— 1. *Mild* ... ... *ib.*
Dissection of the Dead Body 72
Description of Fever in the 2. *Aggravated or Concentrated* ... ... *ib.*
Dissection of the Dead Body 77
Description of Fever in the Periodic Form ... ... *ib.*
Dissection of the Dead Body 80
Cases 81

SECTION III.

Description of Fever in the Phlegmatic Temperament ... 83
——————————— 1. *Mild* 84
——————————— 2. *Aggravated or Concentrated* 88
Dissection of the Dead Body 93
Cases 95
Description of Fever in the 3. *Cachectic* 102
Dissection of the Dead Body 108

SECTION IV.

Description of Fever in the Retrograde or Liquescent Temperament 110
Dissection 114
Cases 115

SECTION V.

Description of Fever in the Serous Temperament ... 118
Dissection 121

SECTION VI.

Description of Fever in the Retrograde—Colliquative or Liquescent ... ... *ib.*
Cases 122

SECTION VII.

Description of Fever in the Sentient and Intellectual ... 123
——————————— *Animal Irritability* 124

PAGE.

Description of Fever in Sentient System 126
Cases 128
Concluding Remark 133

CHAPTER IV.

Signs of Prognostic 136
from Type 137
——— *Anticipating Type* ... ... *ib.*
——— *Postponing Type* 138
Duration of Paroxysms ... *ib.*
Mode of Termination ... 139
Intermission or Remission ... *ib.*
Pulses 140
——— *Tongue* 145
Thirst 146
Vomiting, &c. 147
Anguish and Fidgetting ... 150
——— *Hickup* ... ... *ib.*
——— *Alvine Evacuation* 151
Urine 152
Animal Irritability ... ... *ib.*
——— *Mobility* 154
Intellectual Phenomena ... 155
Eye 159
——— *Countenance* 161
Skin and Temperature ... 162
Perspirations 164
Eruptions 165
——— *Local Depositions—Inflammation or Gangrene* 166
——— *as Irregular* 167

CHAPTER V.

Proximate Cause of Fever 168

CHAPTER VI.

Remedies 181

PAGE.

Subtraction of Blood 182
Heat 198
Warm Bath 200
Cold—Affusion of Cold Water, &c. 202
Frictions, &c. 216
Gestation, &c. 217
Emetic 225
Purgative 230
Diaphoretic 235
Mercury 237
Peruvian Bark 245
Wine, Brandy, &c. 251
Opium 256
Cobweb 259
Blisters 265
Antiseptic—Charcoal 269

CHAPTER VII.

Cure of General Fever 280
General Rule of Practice ... ... *ib.*
Practical View of the Author 283

SECTION I.

Cure in the Sanguine Temperament ... ... *ib.*
———— 1. *Mild Form* ... ... *ib.*
———— 2. *Concentrated* 290
Cases 301

SECTION II.

Cure in the Gangrenous Temperament 305
Cases 319

SECTION III.

Cure in the Phlegmatic Temperament 326
Cases 339

SECTION IV.

Cure in the Cachectic—Progressive 343

SECTION V.

———————— *Retrograde* 349

PAGE.

Case 352

SECTION VI.

Cure in the Serous Temperament 355

Cases 358

SECTION VII.

Cure in the Sentient System 359

Cases 362

CHAPTER VIII.

Convalescence 368

——— *as depending on the Physician* 369

——— *as depending on Higher Power* 374

PART II.

CHAPTER I.

History of Fevers with Prominent Local Action ... 397

SECTION I.

History—Gastric or Bilious Remittent 398

Dissection of the Dead Body 405

Cure 409

Cases 416

SECTION II.

History—Choleric 423

Dissection 424

Cure 425

Cases 428

SECTION III.

Dysenteric or Intestinal Progressive 430

History—1. *Simple* 432

———2. *Complicated* 435

Dissection 436

PAGE.

Cure 439
Cases 446
History—3. *Chronic State* 450
Dissection 453
Cure 454
Cases 463
History—*Retrograde or Liquescent* 467
Dissection 468
Cure 469

SECTION IV.

Hepatic Form of Fever 471
History ... ... *ib.*
Dissection 472
Cure 473
Cases 474

CHAPTER II.

Forms of Febrile Action in the Thoracic Cavity ... 477

SECTION I.

Pneumonic Forms—*Progressive* ... ... *ib.*
1. *History in the Sanguine Temperament* 478
Dissection 479
Cure 480
2. *History in the Phlegmatic* 482
Dissection 484
Cure ... ... *ib.*
3. *History in the Mucous or Excretive* 486
Dissection 489
Cure 490
Cases 493
4. *History of the Constitutional, usually termed Consumptive* 500
Dissection 502
Cure 504
Cases 507
History of the Retrograde 509

PAGE.

Dissection 511
Cure ... ... *ib.*

SECTION II.

Cardiac Form of Febrile Action—Progressive 513
History ... ... *ib.*
Dissection 515
Cure 516
Cases 519
Cardiac Form of Febrile Action—Retrograde 520
History ... ... *ib.*
Dissection 522
Cure ... ... *ib.*

SECTION III.

Febrile Action in Catarrhal Form 524
Cure ... ... *ib.*

CHAPTER III.

Forms of Febrile Action in the Superior or Cranial Cavity—Action Progressive 526
1. *History in Sanguine Temperament* 527
Dissection 528
Cure 529
History in Phlegmatic 533
——— 1. *Milder Form* 534
——— 2. *Concentrated* 536
Dissection ... — 539
Cure 540
D. *Fever on the Sentient System* 546
History ... ... *ib.*
Cure 548
E. *Periodic Forms of Cerebral Fever* 549
Cure 552
Cerebral Fever—Retrograde 554
History ... ... *ib.*
Cure 556
Cases of Cerebral Fever 557

CHAPTER IV.

PAGE.

Forms of External Local Febrile Action 573

SECTION I.

Ophthalmic Fever 573

Cure 574

SECTION II.

Ulcerative Form of Fever 578

History 579

Cure 581

Table 1, *with Note* 587

Table 2, *with Note* 593

Table 3, *with Note* 595

Conclusion 597

ERRATA.

Page 16, line last, *for* Soliel, *read* Soleil.
—— 26, — 4, *for* arises, *read* arise.
—— 111, — 27, *for* ceases, *read* cease.
—— 137, — 19, *after* does, *add* not.
—— 205, — 30, *for* body, *read* boy.
—— 391, — 25, *after* withdrawn, *insert* a comma, *instead of* a colon.

A

SKETCH, &c.

OF

FEBRILE DISEASES.

CHAPTER I.

Tropical Climate—General Feature of Medical Topography—Locality—Seasons—Circumstances of Subject—Epidemic Influences—Contagion, or Non-contagion of Yellow Fever in the West-Indies, North-America, and Gibraltar.

CHAP. I.

Climate.

IT is a fact open to common observation, and so obvious that it cannot have escaped the notice of any one who knows more of the world than the spot on which he was born, that migration from the native to a foreign soil ordinarily acts on the existing condition of health, either by deterioration or improvement. The unfavourable change is noticeable in persons who migrate from Europe, particularly those

CHAP. I.

who migrate from Great Britain and Ireland to the islands of the West-Indies; and it is especially conspicuous during war, when armies, fortuitously collected and thrown together in masses by the exigencies of service, are exposed to all the chances and influences of climate without care or precaution on the score of health. Heat, or high temperature, is obviously stimulant of animal life; and hence the increased temperature of a tropical latitude may be reasonably supposed to act effectively as a direct and extra stimulant to the constitution of the transported European. From this cause we look for the occurrence of diseases of irritation where constitutional irritability is high; and conversely, for improved health and vigour where the irritable power is latent or obscured.

The temperature of the tropical climate varies more or less in different latitudes within the boundary line. It appears to be generally of a lower degree in the southern than in the northern hemisphere; and, though sea temperature is nearly equal in the same latitudes of each hemisphere, the sea coast temperature, owing to circumstances of locality, aspect and position, varies considerably in different islands which lie contiguously to each other. The difference of temperature, during the winter and summer months, may be considered as varying from five to six degrees, more or less according to circumstances; the difference between the highest and lowest degree of heat of the same day is nearly the same on level plains near the sea coast. The tem-

perature of the sea coast and interior is different,—the difference according to the elevation of the interior. I cannot state the degree precisely; but I am safe in saying that it is ordinarily about one degree for three hundred feet; sometimes more, rarely less except from particular circumstances of position; for instance, the position of a small, circular plain, formed as it were into a bason by surrounding mountains, especially by mountains that are destitute of wood. In such case, though the elevation be at seven or eight hundred feet above the level of the sea, the heat, as measured by the thermometer, probably exceeds that of the sea coast; and the effects of its impression, as unaccompanied by the ventilation of the sea breeze, are greatly more distressing to animal life than exposure to the same degree of heat on the open beach. It is further to be observed that positions on eminences, or on the margin of ravines, as exposed to the current of winds from higher mountains, experience sudden changes,—sometimes very considerable ones more or less injurious to health.

As fever is apparently occasioned by causes of irritation; and, as the application of heat excites or exalts the irritable power of the habit throughout, the occurrence of febrile disease, of one form or other, is reasonably to be expected among persons who transport themselves from the temperate climate of Europe, or the higher latitudes of North-America to tropical countries, particularly to the West-Indian islands. The fact corresponds with the expectation;

CHAP. I.

for persons of sanguine temperament, of full habit, who live fully and who live in indolence; or, who labour as it were by starts, rarely escape from an attack of fever during the first year of their residence in a tropical latitude. The fevers which occur under such circumstances are often of the most aggravated kind,—concentrated and rapid in their course, more especially among troops thrown together in masses in barracks or transport ships. The heat of the climate is there augmented artificially; and, though I am ready to admit that adventitious heat is not the radical cause of fever, no one will deny that excess of heat tends to excite the febrile state, to influence the febrile form, to increase the violence of the symptoms, and to act in such manner as to retard the progress of recovery after disease has actually ceased. This is a common and well ascertained fact; but it is observed at the same time that, while the adventitious heat of the tropical climate proves a powerful exciting cause of fever to the robust and vigorous European, it also not unfrequently gives vigour and health to those who are torpid and valetudinary, especially to such as are advanced in years.

Medical Topography.

The islands in the West-Indies, the medical topography of which relates to the subject of this work, lie between the 20th and 10th degree of north latitude; the colonies on the main between the 6th and 7th. The islands, the medical topography and diseases of which have been specially investigated by the author, are Barbados, Antigua, St. Christopher, St. Eustatius, St. Martin, St. Thomas, Santa Cruz,

Guadeloupe, Dominica, Martinico, St. Lucia, St. Vincent, Grenada, Tobago, Trinidad;—the colonies, Demerara, Berbice, and Surinam.—The greater number of the islands are of an irregular surface, the interior of some of them of great elevation; and, with the exception of Barbados, Antigua, Santa Cruz, St. Eustatius, still covered with woods. The mountains of the interior are sometimes in ridge, sometimes in conical form. The ridges descend from the interior towards the sea with intervening ravines of various depth and breadth, viz. sometimes broad plains or vallies, sometimes narrow ravines, with steep precipitous banks—and streams of water of different magnitude and velocity. The conical mountains, more or less regular in form, rise up as it were on a level but elevated surface, and sometimes, by their form and union enclose spaces of greater or less extent, so as to constitute a bason or bottom generally of a loose or boggy soil.—The mountains of Guadeloupe, Dominica, St. Lucia, and St. Vincent are the highest in the chain of islands. The height of the highest, which is Dominica, is not known to me by measurement; but, as judged by the eye, it would not appear to be more than six thousand feet above the level of the sea,—if so much. There are other of the islands that do not exceed three thousand feet in height; and some not more than two. Besides ridges of mountain which descend from the interior towards the sea, which are of different declivity, and between which ravines or vallies of different extent intervene, there are, in many of

CHAP. I.

the larger islands, extensive plains, either level, or diversified by irregular risings and depressions, partly cleared and cultivated, partly covered with woods and still in a state of swamp or morass. Some of these plains are interior, the greater number are near the sea. The most of the islands, particularly the larger ones, are abundantly supplied with streams of water, precipitated as torrents from the mountains in the season of rain: a few of them are nearly destitute, viz. Antigua, Eustatius, Santa Cruz, St. Thomas, and we almost say Barbados. The islands of the greatest elevation have ordinarily the greatest share of rain: the chain from Guadeloupe to Trinidad, particularly Dominica and St. Lucia, suffers inconvenience from excess; Antigua, Barbados, and Santa Cruz from defect.

The colonies on the main, viz. Demerara and Berbice are chiefly planted on the margin of the ocean, or on the lower part of the rivers which open into it. The plantations in Surinam, on the contrary, are on rivers and creeks; the borders of the ocean being guarded by a belt of wood as a security against the invasion of enemies. The cultivated lands in Demerara and Berbice, as below the level of the sea at high water mark, are preserved from inundation by dykes, canals, and sluices. The rise and fall of the tides, which is from twelve to fourteen feet at new and full moon, maintains more or less of movement in the moisture of the soil: without this flux and reflux stagnation would be the consequence, as the declivity is said, by those who have

measured it, not to exceed one foot in one mile. The seasons on the coast of Guyana are generally regular, divided into the seasons of greater or lesser rains: the rains are frequently excessive: sometimes they fail; the miseries of the colony are then great,—mortality among man and beast enormous.

Forms of Endemic connected with Locality.

The cause of endemic fever has the same basis in all parts of the earth: it is modified by circumstances of climate and locality in different districts of similar latitudes, so as to present considerable diversity of appearance in its operation. Thus, in the islands of the West-Indies and on the coast of Guyana, the general basis of action is radically one and the same throughout, but it is modified in action by circumstances of locality, by circumstances of season, and by circumstances of subject, so as to present a variety in the individual according to the degree and modes of these varying relations. On plains near the sea coast, near the embouchure of muddy rivers, near the banks of lagoons and other foul grounds, the type of the fever is usually remittent, sometimes intermittent. It is generally regular in form, comparatively mild and tractable in the more open, extensive and sandy alluvial plains; it is irregular, often violent, in small confined semicircular plains of foul swampy surface; and it is often malignant on eminences that are in the centre of plains, or on the margin of the banks that form them. The morbid action is often dysenteric, sometimes eruptive and ulcerative, where the positions near the sea are dry, bare and rocky; or where water flows with

CHAP. I.

a rapid stream. In the interior of most of the islands, at an elevation of five or six hundred feet above the level of the sea, among a series of mountainous ridges, not exposed directly to currents of exhalation from swampy and low grounds, the form of disease is sometimes intermittent, sometimes remittent or continued, but more generally dysenteric; for the most part slight and manageable, sometimes violent and dangerous. The eruptive and ulcerative, or sore leg, belongs also to the elevated situation, especially in the dry season. The dysenteric form of fever, or fever with other local determination, viz. head or lungs, prevails in the interior; but the danger, though not the apparent violence, ordinarily diminishes in a given ratio with the elevation. The sea coast of the islands is for the most part less healthy than the centre: the diseases are not only more frequent, but they are more dangerous. The sea coast in the colonies of Dutch Guyana is, on the contrary, less unhealthy than the level interior: the fevers, though numerous, are usually remittent or intermittent, and not dangerous if properly treated. The dysenteric form, and even the ulcerative is there comparatively rare, except on particular occasions, viz. excessive drought, &c. Beyond the river tides, and before the land attains that degree of elevation which gives a brisk current to water, the banks of the larger rivers in Guyana are, for the most part, unhealthy; sometimes scarcely habitable to Europeans, —the form of disease cahectic, retrograde,—such as may be termed liquescent. Rain or descending

moisture, in a country of such declivity as gives a brisk current to water, is more directly connected with the dysenteric form of fever than the intermittent or remittent; which is chiefly conspicuous where moisture is exhaled by heat; and where water stagnates under the surface, or has a sluggish course in its superficial channels.

Seasons and Forms of Disease.

Besides locality; viz. elevation and circumstances of exposure, the revolutions of season, viz. summer and winter, spring and autumn; or, as they are more frequently termed, wet and dry, influence in a material degree the form and quantity of fevers of the West-Indies. The months of January, February, and March are usually the most healthy months of the year: the disease then, as well as being less frequent, is ordinarily of a comparatively mild character; the type, if not accompanied with prominent local affection, often such as is termed continued; the course regular; the crisis decided and final. In April and May, more especially where frequent but light showers of rain, with occasional and refreshing changes of temperature, produce what is termed pleasant weather, the dysenteric is usually the most prevailing form of acute disease,—rarely violent in its symptoms, but frequently tedious and uncertain in its cure. Fevers of different types, most generally continued, are common in the months of June and July. In native subjects, or, in those who have been long resident in a tropical climate, they are rarely violent or fatal: they terminate for the most part by regular and distinct crisis; in strangers, they

CHAP. I.

are dangerous,—the fatal course often precipitous. In August, September and October, the quantity of febrile disease increases in most of the introtropical islands; the type periodic,—remittent or intermittent according to circumstances of locality or subject, the symptoms often violent,—the course precipitous or tedious;—the cure imperfect; congestion and impaired function in one or other of the organs contained in the abdominal cavity being often the consequence of a disease of this character, when left to pursue its own course, or when feebly opposed by means of art. The gross quantity of sickness diminishes, for the most part, in the months of November and December; but, according to aspect and position of quarters; viz. position on eminences, on the margin of ravines, or, in the gorge of vallies exposed to currents of swamp exhalation, impelled by the strong and comparatively cold winds that often prevail at this season of the year, the form of the disease, though properly speaking intermittent, is often anomalous, the character treacherous, the event not unfrequently fatal.

The seasons in the West-Indies are distinguished by the appellation of wet and dry, rather than summer and winter; and further distinguished by short and long wet; short and long dry. The short wet season commences in April and continues through May,—the rains are usually light; the long wet season commences in August, continues through September and October,—the rains are heavy, sometimes excessive. The diseases which occur during the wet season are

numerous; but they are rarely violent, concentrated, or malignant. The number ordinarily decreases soon after the termination of the rains; but near foul and swampy grounds, the character becomes malignant, especially in places exposed to gusts, or currents of chill and piercing winds. The pernicious exhalation which occasions the fever is not visible to the acutest sight. It is wafted to the distance of several miles; and it seems to acquire power by the adventitious impulse with which it strikes the body: it is felt more strongly on heights or eminences, and particularly in gorges between mountains than on the open and level plain—even within a short distance of the source itself.—Fogs carry nothing with them that is injurious to health, farther than what belongs to simple moisture. In dry weather, and on a dry, rocky and barren soil, the form under which the endemic appears is usually continued; and, if the dry weather be of long continuance, the character which it assumes is frequently malignant and fatal, even among such as have been long resident in the country and are considered as assimilated to the climate;—among European strangers, the concentrated form which commonly goes by the name of yellow fever, is then often in a manner epidemic and fatal as a plague. At other times, and under other modifications of dry weather that cannot be correctly described, instead of concentrated continued fever, the morbid cause manifests itself by pustular eruptions on the extremities, degenerating into sores, sometimes into gangrenous ulcers which spread

CHAP. I.

rapidly, destroy the membranes of the bone, and even on many occasions the bone itself.

Circumstances of Subject.

Besides locality and season of the year, the individual constitution of the subject materially affects the form of the endemic fever of the West-Indies. In native subjects, and those who have been long resident within the tropics, the forms of the endemic are comparatively regular, the symptoms mild, the fatality not much higher than the ordinary fatality of fevers in Europe. In strangers, persons recently arrived from Europe or the higher latitudes of North-America, the symptoms are ordinarily violent,—the mortality high, not lower than one in three, often not lower than one in two, sometimes not lower than one half, even more than one half. The robust and newly transplanted European, quartered in crowded barracks and attacked suddenly by fever of violent and open action, or action obscured and as it were oppressed by quantity, dies for the most part within the fifth day; his barrack comrade who has been some years in the country experiences no inconvenience, or experiences a disease of a comparatively slight and tractable kind terminating by crisis at a regular critical period. The general cause of sickness is obviously the same to both; the difference of effect depends on the peculiarities of the subject. But while the vigorous and plethoric, as transplanted to the islands of the West-Indies, stands on the brink of destruction from the dangers of ardent fever, the feeble and valetudinary often acquires vigour, and maintains

a competent share of health in the midst of the hardest service of a West-Indian campaign. Diarrhea or habitual purging, sores or ulcers on the legs seem often to be preventative of fever in the West-Indies. When the diarrhea ceases, or when the ulcer heals, or begins to heal, fever of the worst form is often the consequence.

There is generally a rising and falling among febrile diseases in number and intensity, also a change among their forms according to the regular succession of seasons during the annual revolution; but besides this there is occasionally an epidemic influence in the West-Indies, as well as in other countries which, while it multiplies the disease to an incalculable extent, sometimes engrafts on it a feature of malignity which causes it to be regarded in the light of pestilence. The occurrence of such influence is not rare, if the records of medical history be accurately perused, but one which occurred at Grenada, in the year 1793, was remarkable among others; and it is yet kept in memory by the number and acrimony of controversial writings that touch upon the subject. It appeared about the beginning of the month of March which is the most healthy season of the year; and, as the form of it was unusual, it was supposed to have been imported by a vessel which had arrived from the coast of Africa much about the time of its appearance. It was in fact not only supposed to have been imported by the crew of the ship Hankey; but it was strenuously maintained that it was subsequently propagated by contagion; viz. by persons

Epidemic Influence.

CHAP. I.

who had been on board of the ship, or who had been within the sphere of her infected atmosphere. The fact of primary importation and of subsequent propagation by personal communication has been controverted by several writers, and it does not in reality appear to be established satisfactorily by any thing that has as yet been submitted to the public. After long experience of uncertainty on the head of medical fact, I abstain from saying that the importation or the contagion of the Bulama fever was a fancy of the brain; yet I cannot help saying that the circumstances of its history have so little analogy with what has occurred within my own observation, that I more than simply doubt of the correctness of the statement. The disease arose suddenly: it continued for a given time, and it disappeared at a time when the causes which ordinarily aid in forwarding the progress of contagion were in all their vigour. I do not presume to dictate to others on this head; but, if things be accurately examined, the fever which appeared at Grenada in the year 1793,—and which was certainly a fatal one, will be found to present itself with the characteristics of an epidemic, rather than with the characters of a contagious fever.—Its history is illustrated by what occurred on Brimstone-hill, St. Christopher, in the 25th regiment of foot in the year 1812.

Epidemic in the 25th Regiment.

The 25th regiment, like other British regiments, consisted of men of various ages and various habits; some old soldiers of six or seven years service in the West-Indies; some recruits recently arrived; some

few sober; the majority drunkards to a proverb; the whole vigorous and athletic—the grenadiers and light infantry among the finest men that fill the ranks of the British army. The 25th regiment, as appears by the hospital returns, was healthy in the month of January. The sick list increased in the month of February; and, in the month of March, the increase was so great, the violence so marked, and the mortality so alarming that I considered it to be my duty to repair to the spot for the sake of better information than could be obtained by official reports. I arrived about the end of the month. Neither the frequency of the disease, nor the violence of the symptoms had in the least abated; and the treatment, which was what is usually termed mercurial, could not be said to have made any favourable impression on its course. It is indeed true that those on whom the mercury produced early salivation frequently, or rather generally recovered; but it is also true that mercury did not act in this manner in more than two cases in three; and, where it did not so act, death was not averted. The disease in question was the yellow fever in its most aggravated form. It arose in the month of February,—usually the most healthy month of the year; and no grounds could be found, on the most diligent enquiry, leading to a belief, or even suspicion that it arose from imported contagion. The first cases of it were observed among people who were quartered in a small and damp barrack without the barrier gate. The barrack was abandoned; but the disease did not cease. It not only

CHAP. I.

continued, but it extended to every barrack within the walls of the garrison, acting almost indiscriminately upon men and officers, women and children, old and young, those who were recently arrived from Europe, and those who had been five or six years, or more in a tropical climate, those who had never experienced sickness, those who had experienced the fever of the country oftener than once, even some who had experienced it to such an extent of aggravation as to bear the name of yellow fever. The symptoms were usually violent in the young and athletic recently arrived from Europe,—the fatal course rapid, that is, within the fifth day; the symptoms were comparatively mild, the course protracted, that is, to seven or even to ten days in those who were advanced in years and who had been some time in the country,—and generally in women and children. It was thus different in mode and duration; but it was radically the same disease in all. The first cases of it occurred towards the end of February, and some were observed so late as the last days in June; but the mode and the degree were not precisely the same at both times. The disease had attained its point of highest intensity about the latter end of March, and it continued in vigour during all the month of April.—In the months of May and June, the form of the fever, and the character of the symptoms were somewhat different,—less violent, but not less dangerous.

The 25th Regiment was removed from Brimstone-hill, St Christopher, to Beau Soleil in Guadeloupe,

in the beginning of May; the 15th arrived from Guadeloupe to occupy its place on Brimstone-hill. Sickness ceased in the 25th immediately on its arrival at Guadeloupe; it appeared among the soldiers of the 15th in less than a fortnight after they arrived at St. Christopher; and it continued, though in a somewhat changed form and with mitigated force, until the last days in June when it entirely disappeared.—I adduce this short history of epidemic influence, not as the only one which occurred during my last residence in the West-Indies; but as the one which best illustrates the epidemic which occurred at Grenada in the year 1793; and which, in so far as I am able to judge, had no better claim to a foreign origin and propagation by contact or near approach, than that which is here alluded to as prevailing on Brimstone-hill, St. Christopher, in the year 1812.—The health of the civil inhabitants, who lived in the plain, did not suffer during the rage of the epidemic among the military, who lived on the hill; but no person who resided on the hill, whether communicating with the garrison or not, could be said to be exempted from its influence. Several it is true escaped;—but no one can say through what precaution he escaped. It is not safe to say positively that the cause of a contagious fever was not introduced into the 25th regiment from a foreign source in the year 1812; but the most rigid enquiries I was enabled to make on the spot, led to nothing on which even a prepossessed mind could found a suspicion that it was so. But, if any one should be disposed to contend that

CHAP. I.

the introduction was still possible though it could not be traced, the propagation by personal contagion, I am persuaded from as good evidence as can be attained of a medical fact, did not in any degree exist. I remained upon the hill nearly one month; and I visited the hospital five or six times every day, with a view to ascertain every thing relative to the history of the disease and the manner of treating it; and I am free to say that I could not, in any one instance, substantiate the fact of contagion, nor even collect grounds for a probable suspicion of its existence.

The epidemic influence, which is the cause of fever, is evidently different from the common influence of weather and season manifested in the different periods of the annual course; but, though different fundamentally, it is notwithstanding true that the existing epidemic assumes very commonly the feature of action, which belongs to the actual season of the year in which it occurs. In illustration of this position I may add that, during the months of March and April, when the weather was dry, the heat great during the day, the cold considerable during the night, the form of action was such as is usually termed inflammatory,—sometimes suppurative, —sometimes in such excess as to be gangrenous,—the head and stomach, the organs principally affected;—the proofs on dissection numerous and conclusive. In May and June, the weather was mild with moderate showers of rain; the symptoms were less violent in appearance; the head and stomach still were

the organs which suffered,—the mode of the morbid action congestive, chiefly marked by adhesions between contiguous parts and effusions of watery fluid into cavities. Epidemic influence prevailed among the soldiers of the 25th regiment on Brimstone-hill in the months of June and July, 1811; and the cause of the disease, though radically epidemic, manifested, in correspondence with the character of the season of the year, various forms of deranged action in the organs contained in the abdominal cavity,—excretive or congestive according to contingent circumstances. But, besides the occurrence of general fever which derives from the operation of a general epidemic influence; the act, in many instances, is principally local, viz. pneumonic, dysenteric, ophthalmic, even eruptive or pustular, degenerating into foul and sloughing, or gangrenous ulcers on the extremities; which spread with an astonishing rapidity and destroy the substance of the solid parts.

Contagion or Non-contagion.

The limits of this sketch do not admit of much discussion on the subject of the contagion or non-contagion of the concentrated endemic or yellow fever of the West-Indies; but, as it may be expected that a person, whose opportunities of observation have been extensive, should not pass the question without notice,—I shall state my observation unreservedly, and in as few words as possible. The judging the question aright is of some consequence to the interests of the community, and it particularly concerns the interests of the British army. But there is just now so much of prepossession in the case on one part

CHAP. I.

and on the other, that it is not easy to separate the fact from the opinion; and I almost despair, in the present age of delusion, to impress conviction of the truth, even if demonstrated with the evidence of a mathematical proposition. I shall however state what I have seen, leaving the reader to form his own conclusions. I am not desirous of making converts to the one party or the other; for, as it appears to myself, the subject has not been as yet observed with sufficient attention; or, when discussed, it has not been discussed with sufficient temper.

West-Indies.

The dread of personal infection from the common endemic, even from the concentrated form termed yellow fever, did not, in so far as I recollect, operate on the practitioners of Jamaica at the time I resided in that island, which was from 1774 to 1778. I remember perfectly that, in so far as concerns myself, I approached to the bed-side of the sick without apprehension, and opened the bodies of those who died of the worst forms of disease without suspicion that I incurred danger by so doing. I had not then, I am ready to admit, considered the question with care. I might be uninformed; but I carried with me, when I left Jamaica, no impression that the yellow fever was an infectious disease.—That was an impression only: it is no argument,—and I found no opinion upon it.—A military force was collected in Ireland, and assembled at the Cove of Cork for reinforcement of the army at St. Domingo, in the year 1795. The seeds of an infectious fever already existed in the greater number of the corps which

composed this force: they were multiplied by circumstances of weather and aggregation of subject, and sickness spread rapidly among those who arrived at the rendezvous in perfect health. It assumed a formidable aspect in most of the corps after their embarkation; and it was conveyed to the West-Indies by some of them in a state of great concentration. It was fatal to a considerable extent, both on the passage and in the hospitals at Barbados; but I have not obtained any evidence,—(and my official situation gave me opportunities of obtaining it), that it spread to the healthy by communication, either in hospital, or in barracks after the troops were disembarked. It fell within the sphere of my own observation to note the mode of the febrile action, as influenced by climate and other circumstances connected with situation:—it, for instance, though deriving originally from an infectious source, terminated critically at a certain period: relapse was frequent; the symptoms sometimes violent, the termination rarely fatal: the duration of the relapse was ordinarily short; it seldom exceeded the third or fifth day; but it recurred at intervals of eight days or a fortnight, generally with diminished violence in every succeeding recurrence, somewhat, (if we may use a figure,) in the manner as if an accumulated cause of disease had gone off by repeated explosions—until it finally expended itself. From the fact adduced, which was proved on a large scale, it may be fairly inferred that the cause of the infectious fever of jails, hospitals, and crowded quarters

CHAP. I.

gradually dissipates and soon disappears under tropical heat, thorough ventilation, personal ablutions and frequent change of apparel, always enjoined and generally practised by British troops in warm climates. To this I may add that infectious fever was often imported by the numerous detachments of troops, which arrived at Barbados between the years 1812 and June 1815, inclusive.—Considerable numbers arrived in different stages, some in advanced stages of a disease which had been generated on board of ship in confined and vitiated air. The sick were brought to the hospital; those not yet attacked, but who were supposed to have been exposed to infection on the passage, were disembarked and placed in barracks. There were few of them who did not experience fever in some degree or other after disembarkation; but none of them died, and no sickness was communicated by them to other troops in garrison. Of the sick received into hospital, several died on the first, second, or third day after admission; but the disease was not communicated by them to the orderlies and hospital attendants in any one instance.—This imported fever was different in its aspect from the ordinary endemic of the country. The difference was cognisable by a peculiar glistening in the eye, by certain shades of expression in the countenance, and by circumstances connected with the conditions of the skin. These characters of difference exist, and they may be read by the discerning observer; but they are so delicate, or so combined, that they cannot be given so as to be rightly comprehended from verbal description.

From the facts now stated, and they were too often repeated to be regarded as equivocal—even by the prejudiced, it is not possible to refuse assent to the inference that there is something in the temperature of tropical climates, in the thorough ventilation of tropical houses, in the routines of purification and personal cleanliness that usually obtain among troops in hot countries, that strongly counteracts the propagation of infectious diseases, especially of such diseases as derive their origin from aggregated, but invisible emanation from diseased human bodies. The visible and specific contagions, viz. small pox, measles, &c. spread from person to person with the same activity in the West-Indies as they do in Europe; but the cause of the jail, or artificially infectious fever, which we consider to be a matter secreted in invisible form from a diseased animal body, and which we presume, on good grounds of reasoning, to be aggregated or condensed in a stagnant state of the air; and, which we perceive to acquire multiplied virulence by aggregation, is dissipated, diffused and attenuated by the heat and ventilation of a tropical climate; in such manner that it ceases to act, at least to act with injurious effect even on those who are naturally irritable and predisposed to its action. If this be so, we cannot well understand how the cause of a fever that had been generated on board of ship while lying on the coast of Africa, or, on the passage from Africa to the West-Indies, should multiply itself so extensively as it would appear to have done, and so contrary to the rule of multiplication that obtains among other

CHAP. I.

infectious fevers. No person can be so void of understanding as to believe that the cause of endemic fever is imported in the hold of a ship, or in the persons or clothes of those who navigate her. The Bulama fever, as it is called, was evidently a violent and a fatal disease; but it did not appear to carry in its history any marks of specific distinction from all other diseases. Innumerable similar instances, in so far as opinion can be formed of similarity from verbal description, have appeared at intervals ever since the West-Indies were first visited by Europeans,—and they still appear without importation or suspicion of importation from a foreign source. I abstain from giving opinion on what I have not witnessed with my own eye, and shall leave every one to form his own conclusions respecting the propagation of the Bulama fever to the other islands in the West-Indies; but I am warranted to say,—and my official situation gave me the opportunity of knowing the truth, that no disease was imported into St. Domingo from the year 1796 to the year 1798, exclusive of the infectious fever which the reinforcement of 1796 brought with it;—unless a fever which prevailed in the 2nd regiment of the Irish brigade, at the time it arrived from Jamaica, be thought to belong to that class. The infectious fever that was brought from Ireland was so much mitigated by the time the troops arrived at St. Domingo that, though relapses still occurred, little mortality could be assigned to it in that country. The fever that prevailed among the soldiers of the second regiment of

the Irish brigade, seemed to be a seasoning fever, endemic in its origin, aggravated, and probably changed by theconfined air of transport ships during a tedious passage. It more resembled an infectious fever than any other West-India fever I have seen; but, if infectious, it did not communicate its infection to any of the troops of the garrison of Port-au-Prince where the corps arrived; nor did the sick communicate disease to any of the attendants of the hospitals into which they were received; though many of them were in a deplorable condition, the corps having lost about thirty men on the passage, and having a hundred and twenty still on the sick list when it arrived at Port-au-Prince.

But though I hold it to be proved by the histories here detailed that fevers, except those specifically contagious, rarely propagate from person to person in tropical climates; yet I do not deny the possibility of the contingence. If men, either in health or in sickness be crowded into damp and ill ventilated apartments, particularly into bomb proofs, as sometimes happens in time of war from conditions of service, or for want of barrack room in time of peace; the air is contaminated by the emanations of a crowd of inhabitants; while the simple heat of climate, without perfect ventilation, is not sufficient to prevent the aggregation of the noxious or infectious material thus secreted from the body of the subject, either directly diseased, or, living under such artificial constraint as produces a condition analogous to disease. As every series of parts in

CHAP. I.

the organic system is liable to be acted on by a general cause of febrile irritation, it is not repugnant to the laws of animal economy that the infectious mode arises as a consequence of the general irritation, or that the infectious material be produced as it were by accident or contingence. It is perhaps somewhat in this manner that gastric fever which is so common in the autumnal season, particularly in protracted campaigns in temperate climates, though originating radically from an endemic cause, either primarily assumes the mode of action which generates the infectious material; or acquires it secondarily by a combination of artificial circumstances to which the individual is exposed. We know from history that the camp or gastric fever of autumn is easily and ordinarily converted into the hospital or directly infectious fever of winter,—and we may comprehend the manner according to which it happens. The principal action of the gastric is exerted on the gastric system—on a series of parts of the least sensible excretion: the action is transferrable, and it is contingently transferred to the corresponding series of the excretories of the skin, as a consequence of changes induced by a variety of external causes;—hence the infectious material in the cutaneous excretion.—The infectious fever of jails and hospitals is ordinarily a disease of a slow course. We cannot say at what point in the progress of the diseased course, the infectious material which is the product of the diseased action attains maturity or efficient activity; but we cannot,

according to analogy in other things, suppose it to be sooner than the ordinary period of the fatal crisis of the yellow fever. The yellow fever, when it terminates fatally, usually terminates within the fifth day,—the progressive febrile act within the third. Hence it is evident that the infectious material, whatever its nature may be, must assume its form and be matured into efficiency before the third; for after the third, the process is retrograde to disorganization, where no peculiar creative act exists, or can be supposed to exist. Further, the infectious material of fever, whatever it may be, attaches itself to the serous or excrementitious part of the blood: it acts on colourless vessels; the product of the act is invisible, excretive, necessarily external: the cause of yellow fever, wherever it may reside, acts most commonly on vessels which contain red blood, or coagulable lymph; the product is visible and internal, viz. suppurative inflammation, adhesive inflammation, stagnation of blood in the veins, and gangrene direct. The process of multiplying the infectious material by the laws of organic life is reasonably supposed to be a regular process of creation: the movements of the yellow fever are ordinarily tumultuous, irregular, destructive of organic structures, so as to occasion death speedily, and as it were prematurely; hence the process generative of infection, if infection actually belongs to the case, is impeded, perverted and annulled by violence; consequently the propagation of the disease fails, notwithstanding that the infectious seed may be ac-

CHAP. I.

tually planted.—The rapidity of the process, through which the infectious material of the yellow fever must be multiplied in the case supposed, seems therefore to contradict the ordinary laws of animal organism in producing contagions; and hence, if there were no other cause to raise a doubt on the subject, this simple fact, and the reason of the fact leave the opinion of propagation by personal communication on very equivocal ground.

I think I am warranted to say that the Bulama or yellow fever, as it is termed, was not imported into St. Domingo between the month of May, 1796, and the same month of the year 1798; while I am also warranted to say that the returns of the hospital show the existence of a disease of concentrated force and great mortality, among the troops stationed in that island during that interval. No infectious fever was imported, or supposed to be imported into the windward or leeward islands, except from England, from the beginning of 1812 until June 1815; yet sickness was sometimes severe; the disease aggravated, —such as any one would pronounce to be genuine yellow fever. It was not in my power, with every attention given to the subject, to trace the propagation of fever from one person to another, either in St. Domingo, or in the windward and leeward islands; notwithstanding that sickness was sometimes epidemic, and the hospitals much crowded; but I do not therefore pretend to say that diseases, which arise from epidemic, or even from common causes, and which are not in their own nature infectious, may

not be so changed by artificial circumstances as to assume the infectious process. Of this there is some proof; and, to this I may add that, though tropical fevers be not infectious personally, even in their most aggravated forms; yet there often occur deceptive appearances on this head which encourage contrary opinion: to these I now advert.—A febrile disease, in one form or other, shows itself among a given number of European troops, sometimes in two, sometimes in three, and sometimes not until after six, eighteen, or even more months from the time of their arrival. It occurs without suspicion of imported contagion; but, it often proceeds through different corps, or different parts of the same corps by such modes of succession, as if its propagation actually depended on personal communication. For example, of two corps which have arrived in a tropical climate at the same time, and which are quartered in contiguous barracks, or encamped on contiguous ground, one experiences concentrated fever; the other remains in health, or experiences sickness in a mild form. This difference is even observed in different companies of the same corps; and the observation of the fact obliges us to conclude that there is a secret and unappreciable correspondence between the habit of the subject and the constitution of the atmosphere which may be termed aptitude, the existence of which affords the only explanation that can be given of the fact so often observed among newly imported troops. The aptitude diminishes by residence; and it is absorbed or destroyed under the

CHAP. I.

changes which take place during the action of a severe febrile disease. It is termed seasoning or assimilation to climate; but assimilation, among a body of troops, is never so perfect that change from one island to another, though nearly of similar latitude, does not affect the health so as to occasion increase of the sick list.—Besides the general and inscrutable aptitude now adverted to, there exist various adventitious causes, the operation of which so much affects the aspect of disease as to give, on on some occasions, the appearance of infectious influence. The more important of these are indolence and rest—after a series of regular and active exercises; full living or excess—after abstinence and sobriety; transition to the heated and impure air of a crowded ship or crowded barrack—after ranging at freedom in the pure air of woods and mountains,—even sometimes the opposite. The form of disease, as it occurs in the newly imported European exposed to the influence of the adventitious causes here alluded to, is often violent,—the action sometimes irritative, sometimes oppressive; and, in the heated air of a crowded ship, sometimes gangrenous and fatal as a pestilence.

I have said more than I intended, and more perhaps than is relevant, on the importation and infection of the disease termed yellow fever as exemplified in my own experience in the islands of the West-Indies. It is known that a disease, somewhat similar in appearance to the tropical fever, committed considerable ravages in different sea port towns on the continent of North-America, at intervals between

North America and Gibraltar.

the years 1793 and 1800. A similar disease has latterly appeared in different towns on the sea coasts of Spain; and among others, at Gibraltar which is garrisoned by part of the British army. The occurrence of the disease at Gibraltar occasioned considerable sensation in Great Britain; and discussion on its history and character has lately engaged the attention of some writers of medical rank; but the subject, in so far as I am able to judge, has not been rendered clear by their learning and their labours. The higher of the official authorities maintain that the origin was foreign, and that the character was contagious: others of less official authority, but not necessarily of less credibility, doubt or deny the fact. It is difficult for a person who has not been on the spot to come to a conclusion; and, even if one had been on the spot, the fact might not be easily ascertained. Affidavits and official reports are not authentic evidence; and the investigation of fact by one's own effort is often a laborious task, in which an individual of even the greatest industry may fail. The opinion of the importation and contagionsness of the yellow fever of North-America was supported by reports and affidavits of perfect formality, as well as that of Gibraltar; even belief in the accuracy of the fact and opinions obtained currency for a time; but the good sense of the American physicians ventured at last to examine the question without prepossession, and to judge the case according to the uniform and established laws of nature,—not the reports of ignorant and prejudiced men. They saw

CHAP. I.

the truth, abjured their error with candour and manliness; and the State, which had a philosopher for its president, opened its eyes to the conviction of truth—and abrogated the rigid law of quarantine. We do not look to the same issue, even, if there should be the same conviction among medical men that the yellow fever of Gibraltar is as void of contagion as the yellow fever of North-America and the West-Indies. The quarantine law is an engine of the state; and, like other of the ordinances of power, it is so sacred that to attempt to prove that it has been made without cause, or that it is maintained contrary to reason, would be labour lost,—if not penalty. It must therefore remain as it is—until the Lords of the council become philosophers.

The history of the fever at Gibraltar is extremely embarrassed, so obscured by what has been said and written upon it, that it is difficult to form a distinct idea upon the subject. In such uncertainty, I would not presume to offer positive opinion; and I only add that as the disease, in its different visits, usually appeared near a given time, and continued for a given time only, it has more correspondence with what belongs to epidemic influence, than to individual or imported contagion. The Gibraltar fever spread rapidly and extensively in the manner of pestilence which depends on a general condition of the air: diseases of imported contagion necessarily spread slowly and limitedly, as communicated from person to person only. It is obvious to every man's common sense that epidemics are not

Epidemics not contagious.

contagious in their origin; but it is admitted that the general infection of the air may be so multiplied by artificial causes in particular places, as to give at first sight an appearance of it; nay, it is even probable that, under epidemic influence, the accumulation of sick persons in confined and ill ventilated apartments has actually sometimes produced a cause of personal infection, which may supersede, or which has even partially superseded the genuine epidemic then prevailing. Whether this happened at Gibraltar, or not, does not appear to be determined by distinct evidence. That the attendants on the sick suffered, —unless they suffered in a decidedly greater proportion than the rest of the garrison, is not conclusive of the existence of personal contagion: if clothes, worn by the sick, or placed near the sick, were conveyed to distant places; and, if they there communicated disease to persons in health, no one would presume to refuse the evidence; but this, in so far as I have seen, does not appear to have been said, at least to have been ascertained. The exemption of persons placed in quarantine, seems at first sight to countenance the opinion of the contagious nature of the disease. The case is specious; but it admits of explanations which, if they do not absolve from the opinion, considerably weaken its force. Persons placed in quarantine, as well as living in an atmosphere little disturbed by changes and vicissitudes, are ordinarily enjoined to live after a regular and cautious manner: they are thus little exposed to contingencies which, if they be not in themselves the cause of

Quarantine.

CHAP. I.

fever, are often the obvious cause of its explosion. Hence it is observed that persons, who live in a still and undisturbed, but infected atmosphere, are often exempt from formal disease; that transition into purer air of a different, or even nearly of the same temperature, is followed by a paroxysm of fever. This is a fact—and it is often exemplified in withdrawing troops from infected quarters to the open country; or, from sultry plains to mountainous districts. The sick list is usually increased on such occasions,—and it is still more decidedly increased where the change is made from the mountainous district to the sultry plain; or, from the open plain to the crowded barrack, or crowded transport ship:—if this be so, it is reasonable to conclude that observance of the quarantine law prevents the spreading of sickness to a certain extent by precluding vicissitudes, exclusive of its precluding the chances of exposure to concentrated infections. It has been said by some that the yellow fever propagates only in a high atmospheric temperature: it however appears to have occurred at Philadelphia in 1793 to considerable extent, when the thermometer was far under sixty; and it occurred at Gibraltar in the month of November when it was under seventy. It has also been said—and generally believed, that the disease does not attack the same person a second time: if black vomiting be considered as the diagnostic criterion, the assertion cannot be easily disproved; if yellowness, it is not founded. There are numbers of persons who have been yellow and dangerously ill

High Temperature.

Re-infection.

oftener than once during their residence in the West-Indies, particularly in migrating from one Island to another.—The rule is not absolute; but still there is something in residence and in changes induced by concentrated fever, that renders the habit comparatively little susceptible of the form of disease, which terminates by black vomiting, and which, in pre-eminence, is termed yellow fever. It does not absolutely preclude it;—nor is the opinion of its peculiar or specific nature at all established by any thing yet submitted to the public, however confidently asserted.

CHAPTER II.

Characters of Constitution or Temperament, antecedent to formal Occurrence of Fever.

CHAP. II.

THE order and efficiency of human health depend upon the existence of equally balanced action among the several organs, series of parts and humours of which the animal machine consists. The action may be such as remains within the limits of the healthy circle; but such, at the same time, as manifests various modification in the feature and various degrees of energy in the effect. The modification is termed constitution;—or more properly temperament. Constitution or temperament, antecedent to disease, gives a feature to the diseased action, when the febrile cause is applied, of great importance in aiding to trace the history correctly, or to direct the plan of cure effectively. The sanguine—the phlegmatic—the serous—the melancholy—the bilious and nervous constitutions or temperaments

are frequently alluded to in the writings of physicians. The distinctions are founded in fact; but I do not myself view them precisely in the same light, as they appear to be viewed by the generality of writers. The sanguine, phlegmatic and serous may be regarded as general constitutions, manifested more or less in every part of the system; the melancholy and bilious are partial or organic, manifested chiefly in the actions of a series of subordinate parts; the nervous is an adjunct to every one,—not stable in form, and not easily described—as consisting in unappreciable risings and fallings in animal irritability, the cause of which lies beyond the limit of our comprehension.—The distinctions now made deserve the consideration of the practitioner: for unless they be kept in view in description, history will be confused and often contradictory; the rule of practice embarrassed—and sometimes mistaken.

Sanguine.

The sanguine temperament, usually termed inflammatory, is the most obvious and striking in appearance of any of the temperaments that exist in health. It may be permanent, as radical in the basis of the organization; or contingent, as the effect of periodical revolutions of season and other more accidental causes. It is connected with a high portion of animal heat, a superior degree of life, sensibility and animation, an elastic and firm fibre; sometimes with sensibility—or undue mobility,—a soft and flaccid fibre. The blood, as drawn from a vein, is florid and warm—coagulating firmly, and often speedily; sometimes florid and bright,—coagu-

CHAP. II.

lating slowly and loosely. The sanguine constitution is not confined to season; it is notwithstanding most conspicuous in the latter part of winter—in spring and the early part of summer,—in dry and cool weather,—among persons who live in mountainous and dry countries,—who live temperately, who labour in the fields, or otherwise spend much of their time under exercise in the open air,—and who are always actively employed. It is consistent with the highest state of health, but not always with the most secure; for, as connected with a high degree of constitutional sensibility, it is excited into a state of febrile irritation by comparatively slight causes.—When general fever occurs under a moderate degree of the sanguine temperament, the febrile movements are animated and regular,—the process suppurative, the termination by crisis, viz. sweat and hypostatic urine. When, under the same temperament, the febrile act is complicated with prominent local affection,—local suppuration is the consequence: further, when under its excess, however produced, the regular suppurative process of the febrile process is impeded, the consequent act manifests general or local stagnations and gangrene; and finally, when under deficient elasticity of fibre and deficient power of contractibility in the blood, colliquation or putrescence constitutes the mode of termination.

Phlegmatic.

The phlegmatic temperament is not perhaps less frequent than the sanguine. It prevails generally in champaign and swampy countries, in damp and foggy weather, among those who live on grosser

aliment—and who are inactive in mind and body. Its presence is known by a soft, smooth, inelastic skin,—deficient in warmth and sensibility; a countenance torpid and heavy,—pale and pasty; an eye pearly white,—dull and inanimate. The blood, as it flows from the vein, is less warm, less florid or bright in colour than in the preceding. It coagulates slowly and imperfectly in the vessel into which it is received,—the surface plain, smooth, and jelly like,—the colour dingy pale, or sky blue. When a cause of febrile irritation occurs under the predominance of this temperament, the subsequent febrile act manifests comparatively slow movement: the crisis is imperfect,—rarely effected by sweat, and seldom accompanied by hypostatic urine. But, besides the acute and customary form of febrile action in subjects of the phlegmatic habit here alluded to, the febrile cause sometimes excites a chronic form of disease of such duration and character as to constitute a constitutional cachexy.—This is frequent in particular countries, or particular districts of country. The colouring part of the blood and muscle is expelled in such case by a process of an unknown nature: it is replaced by the apposition of coagulable lymph or fibrine, so as to establish—sometimes a general—sometimes a local form of organized congestion and new growth.—The pure sanguine and phlegmatic temperaments, which depend severally on predominance or changed condition of the red part of the blood or of its fibrine, are sometimes mixed; at least they interchange occasionally in the course of the disease.

CHAP. II.

The blood in such case, as drawn from the vein, forms into a firm mass in the vessel into which it is received, showing at the same time a covering of buff turned up at the edges in the manner of a cup:—the diseased action, as judged by the effect apparent in the dead body, is here adhesive and suppurative.

Besides the sanguine and the phlegmatic temperaments, which obtain to greater or less extent in the ordinary states of health; and which appear to determine the mode of action which takes place from the impression of morbid causes, there seem also to be predispositions, or peculiar processes of action in the serum of the blood, constituting what may be termed serous temperament. The serum, as the excrementitious part of the blood, is the seat of acrimonies and contagions. All excretions are made from the serous mass: some are gross and visible; some subtile,—not visible to the human eye,—and only known to exist from the effect produced. It would be folly or imposture to pretend to define what is not visible; but it is safe to say that, where the serous temperament; that is, the temperament of acrimony prevails without actual fever, the aspect of countenance is often withered and dry, the habit irritable, the feelings irksome,—accompanied occasionally with itchings, eruptions and acrid excretions of different kinds. The blood, as drawn from a vein and permitted to cool, separates into parts: the serum has something peculiar in colour or taste; but it is not possible to define its character with precision. When the efficient cause of fever is applied

Serous.

to a subject in this condition, a morbid action commences and the disease takes its character from the character of the prevailing acrimony. The effect is sometimes constrictive; sometimes solutive. Excretion is visible and varied, or invisible and subtile; it is capable of condensation; and it is sometimes endowed with the property of multiplying its quantity, and propagating its kind to other contiguous subjects.—The bilious and mucous, and catarrhal constitutions depend on serous acrimony.—They are of frequent occurrence, but they are only local,—confined to the function of an organ, or the function of a series of parts,—extensive, but subordinate.

Nervous or Sentient.

The nervous temperament attaches to every one of the temperaments now described. It is characterized by excess or defect of irritability; viz. by exquisite sensibilities that do not bear ordinary stimulation without extraordinary reaction,—spasm or convulsion; or deep torpor that refuses action to strong impression. These exist generally or organically: they modify or influence appearances; but the proper febrile act moves radically under the law of its own condition.

The form of constitution or temperament now mentioned belongs to progressive action; there are others which belong to retrograde—also of importance to be considered; viz. The gangrenous, which may be regarded as the counter part of the sanguine, occurs not unfrequently in tropical climates. It is known by a dark and scurvy-like appearance of the countenance; the eye is usually

Gangrenous

CHAP. II.

white and dull; the countenance dark and somewhat livid; the tongue red and generally moist; the skin thick and dry, or thick and clammy,—the heat of a low temperature; the blood, as drawn from the vein, dark; the crassamentum loose and easily broken,—sometimes almost without cohesion. This temperament is sometimes produced by unknown epidemic influence; sometimes it is obviously produced by artificial causes, viz. bad diet, particular kinds of grain and corrupted provisions, excessively hot and dry weather. When a cause of febrile irritation occurs in such a habit, stagnation, or tendency to stagnation in the venous system, is the ordinary effect; particularly stagnation in the larger spongy organs,—liver, spleen, or lungs:—death is sudden.

Solutive Phlegmatic.

The solutive phlegmatic—counter part of the accretive, is often observed in particular districts of country, particularly near the banks of fresh water rivers, or fresh water lakes. The countenance becomes pale and pasty,—sometimes yellow: the skin is dry, but soft and smooth; the lips and gums pale; the tongue pale, smooth, without prominent papillæ:—the blood, if drawn from the veins of persons in the circumstances described, is pale, watery, and incohesive.—When a cause of febrile irritation is applied to this solutive or liquescent constitution, the body melts away in a singular manner: all the fleshy parts diminish in size and become flaccid as wool;—the progress to dissolution is often rapid.

Colliquative Serous.

The serous assumes the retrograde colliquescent process on many occasions: it is distinguished princi-

pally by acrid ulcers on the extremities, and by various forms of colliquative purging. These, while they continue, are preventative of the explosions of formal fever.

CHAPTER III.

Description of Fever, as it occurs in the Islands of the West-Indies, and on the Coast of Dutch Guyana.

CHAP. III.

THE following description of fever applies to two extremes, viz. the mild and the aggravated:—the intermediate shades are numerous and various. The dominant temperament, under which the febrile cause produces its action, is kept in view in the following descriptions:—the detail of history is drawn from cases that present themselves as unopposed, or as feebly opposed by art.

The blood, as drawn from the vein in fevers of the sanguine temperament, is generally florid and warm. It flows freely and with force; and it often, but not always, separates speedily and perfectly into constituent parts when allowed to rest. The crassamentum is often, not always firm, sometimes slightly turned up at the edges in form of a cup, and sometimes imperfectly

covered with an appearance of buffy coloured crust.

1. The *mild form* of continued fever, in the sanguine temperament, sometimes comes on suddenly, sometimes the formal attack is preceded by unpleasant sensations at stomach, listlessness, head-ache, drowsiness or watchfulness. The actual invasion is usually indicated by a sense of cold at the extremities—and in the back; a creeping in the flesh, termed horror; sometimes by shivering and even by shaking. The sensations of cold are usually stronger in the periodic than in the continued forms; but, in subjects of the sanguine temperament and of the open form of action, they are rarely intense or of long duration in either. The sensation of cold is not constant and uniform: it alternates with flushings of heat at longer or shorter intervals; and it is, for the most part, soon banished by the influence of heat predominating throughout. The heat of the surface, as measured by the thermometer, or as judged by the touch of a healthy person during the tumultuary period of invasion, is rarely below the standard of health,—it is sometimes above it. The mouth is clammy, sometimes dry: thirst considerable, sometimes intense: nausea common; actual vomiting not rare: head-ache generally considerable; sometimes sharp: pains in the back, in the joints, and in all the limbs more or less distressing: respiration more or less disturbed, sometimes hurried: the pulses of the heart and arteries frequent in time, quick in manner, sometimes irregular, generally small or contracted: the skin is hot, and usually dry.

Symptoms of Invasion.

CHAP. III.

Evolution.

As the sensations of cold diminish, the sensations of heat increase; and the actual degree of heat, as measured by the thermometer, sometimes rises to a high standard. The head ache is often severe; the respiration regular, but high and hurried; pulses of the heart and arteries frequent and quick,—energetic and comparatively expanded; the skin dry, warm, glowing and animated; the countenance clear and florid;—sometimes preternaturally flushed; the appearance of the eye more or less changed,—sometimes muddy as in slight ophthalmia,—sometimes clear, lively and brilliant.—In twelve or fourteen hours, the evolution is completed: the commotion subsides in the continued form by partial moisture; in the remittent by moderate perspiration; in the intermittent by copious sweat.

Progress.

The mild continued fever of the sanguine temperament has diurnal risings and fallings during the continuance of its course; the symptoms advancing progressively, for the most part, to a higher degree of intensity in proportion as the disease approaches to a critical period. The head-ache is sometimes very distressing during the period of excitement;—the intellect not unfrequently disordered previously to the occurrence of the crisis. The pulse, which is usually small, frequent and irregular during the tumults of invasion, becomes energetic and expansive as the disease advances: the skin is warm, even hot and animated throughout,—soft but without perspiration: the tongue is often foul,—covered with a whitish or cream-coloured mucous coat: the

thirst considerable, but not excessive: the bowels torpid, sometimes with difficulty moved by purgatives: the urine diminished in quantity,—high coloured; and, as the course advances to a critical period, thick and turbid: sleep is seldom refreshing—or tranquil.

The symptoms, now enumerated, augment in intensity by gradual increase, subject, as already said, to risings and fallings at stated times until the fifth,—or oftener until the seventh day; when perspiration, frequently after a period of febrile excitement higher than usual, appears on the head and breast, descends by degrees to the extremities, becomes general and copious—and of long continuance, often accompanied with calm and easy sleep, abatement of thirst, the appearance of pustular eruption about the mouth, separation of the mucous crust which covered the tongue, craving of food, subsiding of the pulse to its natural or nearly to its natural state,—and other signs of returning health in all the functions.—The remittent follows a similar course: it usually terminates by crisis about the seventh; the intermittent has no period of natural crisis.—The above history is given as an outline history of the mild continued: it applies equally to the remittent—with the difference between subsidings and distinct remission; and, to the intermittent with the difference between remission and intermission.

Crisis.

The form of action which the disease assumes is suppurative, viz. coction and crisis; the mode of ter-

CHAP. III.

Mode of Crisis or Change.

mination copious perspiration and hypostatic urine. The crisis is usually distinct; but it is not always final. Relapse occurs in many cases, and the character of the symptoms of the relapse is often different from that of the original. But further, instead of crisis and relapse at an uncertain period, the character of the symptoms sometimes changes on the fifth or seventh; from which period the disease assumes a mode of the retrograde form; viz. the pulse becomes soft and weak, still continuing regular, even appearing distinct and full as lightly touched, but sinking under the smallest pressure. The heat is rarely above the natural standard, oftener below it; the skin is soft and flaccid,—open and perspirable—in contradistinction to thick, constricted and dry; sometimes it is bedewed with sweat,—not copious, fluid or warm; or, if copious, emitting an unpleasant odour like that of a fish-market. The lips are generally of a beautiful cherry red; the cheeks of a fine bloom like carnation: the bowels open, even loose;—the evacuations fetid, the odour sickly or faintish:—the urine offensive: marks of colliquescence are general. This form of disease did not often occur at Barbados between 1812 and 1815: it was not uncommon at Savanna-la-mar in Jamaica between the years 1774 and 1778;—and it made its appearance occasionally in St. Domingo in the years 1796 and 1797.

2. The mild endemic of the sanguine temperament tends to a favourable termination by the suppurative process of coction and crisis. The *aggravated,*

Subject of the Disease.

degrees of the disease occur in European soldiers soon after they arrive in tropical latitudes; more particularly among soldiers who are crowded in their quarters, who are exposed to changes and vicissitudes of weather, who encounter fatigues without precaution; or, who give themselves up to ease and enjoyment without discretion after the term of the fatigue or service is past.

Invasion—tumultuous.

The attack of this form of disease is often, but not always sudden: head ache, weariness, irksomeness and other uneasinesses sometimes precede by twelve hours,—by fourteen or more. The commencement, whether the type be continued or remittent, is marked by more or less of horror and shivering: the sensations of cold recur at intervals; they sometimes continue long, but they are rarely high in degree. The head ache, common to almost all fevers, is here generally severe,—sometimes excruciating. It darts through the whole of the head, but strikes more particularly at the fore-head and temples, accompanied, at the same time, by a sense of tightness over the eyes as from the binding of a cord. The eye is inflamed, muddy and confused, exhibiting an appearance as if it had been exposed to the smoke of green wood: it is hot and painful,—protruded, and occasionally agitated as if the person was under the influence of passion. The countenance is flushed—even to a deep crimson;—sometimes agitated and expressive of pain and anguish;—sometimes torpid and bloated as if from plethoric oppression. The tongue is often white, clammy and moist;

CHAP. III.

—sometimes brown, rough and dry;—sometimes little changed in appearance from the tongue of a person in health. Thirst is irregular: where nausea prevails it is seldom great; nausea and a desire to drink, notwithstanding, sometimes meet together. Pains of the joints, of the back and of the calves of the legs are often severe,—similar to the racking pains which occur in the cold stage of the more malignant intermittent: cramps are not uncommon—they are of the same kind with those which occur in cholera. Nausea, or sickness at stomach is an early symptom in most cases; it is in fact often simultaneous with the first feelings of indisposition. When actual vomiting takes place, the matter ejected, beyond the simple contents of the stomach, consists usually of a watery viscid fluid; rarely bilious, unless where paroxysms and remissions are discernible. Delirium occurs sometimes, but not often: when it does occur, it is ordinarily violent,—an outrage of short duration. The pulses of the arteries, frequent in number in a given time, are usually small and contracted, concentrated, or deep seated;—sometimes they are irregular, hurried and tumultuous, struggling as it were for expansion, or for liberty from the hand of oppression. The heat of the extreme surface is seldom great as judged by the light touch. A limb, or any part of the body grasped strongly by the hand, gives out a strong heat, apparently from a deep seated source—in degree almost intolerable on some occasions. The skin is usually dry,—thick as if preternaturally compacted,—

torpid and little sensible of stimulation; if moist, the moisture is clammy and greasy, not warm and fluid —it is in fact such as characterizes agonies of suffering rather than energies of circulation. The alvine evacuation is irregular; the bowels most commonly costive—even torpid, so as to resist the action of the strongest purgatives; if the bowels be loose, the evacuations are watery and ineffective: the urinary discharge is likewise uncertain,—ordinarily diminished, sometimes almost suspended.

Progress—tumultuous—impeded.

The tumult of the forming fever subsides, in some degree, after a duration of ten or twelve hours. The intensity of the head-ache abates, and the eye becomes comparatively serene. The relief is sometimes considerable so as to be taken for a remission:—it even is so; but, it is of short duration. In less than six hours in some, and in twelve or fourteen in others, the symptoms recur with aggravation;—in the continued form, without sensations of previous cold;—in the remittent, with a sensation of cold scarcely perceptible. The pulse, which during the first twelve hours, was small, frequent, hurried, and irregular, is now hard and quick, the stroke repeated at equal intervals of time, but without that freedom of dilatation and energy of contraction that indicates safety, or a tendency to favourable crisis. The heat of the body, particularly on the head and trunk, is strong, deep and concentrated; the heat of the surface and extremities, especially as lightly touched, is moderate; as closely embraced, pungent and unpleasant to sensation by its impression. Thirst is irregular,—

CHAP. III.

intense, or little noticeable. If nausea prevail, and, with nausea, a foul and moist tongue, thirst is seldom great; or, if great, there is a loathing and aversion to swallow drink. If the mouth and tongue be dry, thirst is intense: vomiting and intense thirst, as already mentioned, sometimes meet together,—but the occurrence is not common. A sense of burning pain and anguish is felt at the pit of the stomach,—the pain not acute, but such as does not bear pressure;—it is impatient of the slightest touch. The head ache, which had somewhat abated at the close of the first twelve hours, usually recurs with the recurrence of other symptoms: and it sometimes recurs with intolerable severity; the temporal arteries beat strongly, the carotids violently. In other cases, the pain is less distressing, the commotion in the carotids less sensible; but a sense of heaviness and fulness prevails throughout the whole head, sometimes accompanied by drowsiness—without sleep. The ideas are confused: the mind is not under command; but delirium, properly so called, is not common. The countenance continues to be highly flushed,—sometimes flushed even to crimson: the features are turgid—without expression, or with expression of anguish. The skin is compacted, thick, dry,—in a manner impervious,—and of so little sensibility that the strongest blisters sear, but do not vesicate: the muddiness, apparent inflammation and unpleasant aspect of the eye increase: the urine is high coloured and scanty; the discharge, or rather the secretion nearly suspended: the bowels continue

torpid, insensible to the action of the strongest purgatives; or, if irritated into action, the act is irregular and by starts, the evacuation, so extorted, watery and ineffective. Respiration is often hurried and irregular, occasionally deep and laborious. The sensations of anguish and anxiety at stomach are distressing: fidgetting, or the incessant desire of changing place and posture, without object or apparent cause, is singularly conspicuous;—it is characteristic of the disease, marking a tendency to disorganization in the coats of the stomach. With all this tumult and agitation, and amidst so much pain and suffering, the muscular strength is not materially impaired; at least there is no indication of weakness or disposition to faint when the patient rises up, walks about in his apartment, or even to some distance.

The above is the description of the concentrated fever where no accident has occurred, or where no artificial treatment has been employed to act upon its form. Where remedies have been employed; or where accidents of such force have occurred as change the circumstances of the case, the powers of the circulation proportionally expand, the pulse opens, the skin recovers animation, the head ache continues severe, but the mode of the pain changes: delirium, tremors, agitations, and other actions which denote increased animal irritability manifest themselves; and the distinction of paroxysm and remission, though obscure, is often observable.

Contingent Evolution.

CHAP. III.

The duration of the febrile irritation varies in different subjects and under different circumstances of treatment. In the most concentrated, as left to its own course, it sometimes does not extend beyond twelve or twenty-four hours; it more commonly continues thirty-six, forty-eight, or even sixty,—with occasional risings and fallings in the interval, but with no abatement that has any claim to be termed remission. It then declines, sometimes gradually, sometimes rapidly: the increased heat forsakes the surface, even falls low on the extremities: it still continues high and pungent on the trunk of the body, particularly at the pit of the stomach. With this change in the state of animal heat, the pulse also changes: it becomes regular, full and slow, so as to be scarcely distinguishable from the pulse of a person in health. It is sometimes full and expanded, apparently energetic,—such as gives the expectation of crisis by sweat. The tongue is then moist,—red and clean at the edges, resembling the tongue of a person in whom the febrile process has ceased. The tumult and turgidity of the countenance subside; but the countenance does not resume its usual animation; on the contrary, it becomes inanimate and inexpressive. The eye, muddy and confused in the first days of the disease, becomes comparatively calm about this time; but the character of the inflamed appearance changes, the veins becoming distended as if they had been filled by injection. The skin, which was always thick, is now torpid,—in a manner impervious as if it had lost connection with the living

Acme—Decline or Retrograde.

system.—About this time also, a tinge of yellow is observed in the tunica-albuginea of the eye, at the angles of the mouth, and other less coloured parts of the skin.

Fever, considered as a progressive process, terminates at the point described. From the termination of the forward course, a series of organic derangements commence, and proceed with more or less rapidity to partial destructions which implicate the general destruction of life. The stomach is one of the organs which suffers primarily and importantly in the concentrated continued fever of the West-Indies; but the character of the suffering is various and not easily defined. It does not consist in pains and spasms, retchings and vomitings of bile and other matters as in the paroxysms of ordinary remittents. It consists more commonly in a peculiar sensation of nausea, burning and anguish, accompanied with the ejection of such liquors as have been drank, rendered ropy and viscid by foreign admixture. This relates to the early stage: from the point of subsidence, the local distresses in the region of the stomach increase. Sensations of burning heat, accompanied with a sense of weight and heaviness, anguish, impatience of pressure, obscure and interrupted hickuping, nasuea and actual vomiting, are the most conspicuous. The matter ejected by vomiting at first ordinarily clear and ropy in itself, is soon intermixed with numerous shaggy flakes of a somewhat dark colour, the quantity frequently much exceeding the amount of all that has

Local Sufferings and Disorganizations.

CHAP. III.

been drank. But, though the quantity of the matters ejected be often great, the ejection is not made through severe effort; consequently, unavailing retchings do not belong to the history of the disease. It was stated above that what is thrown up is at first ropy and clear, intermixed with shaggy dark coloured flakes: it becomes black and dirty like the grounds of coffee, sometimes black as soot mixed with water for some hours before death;—that is, generally about the middle of the fourth day.—The bowels, as already observed, are little sensible to the stimulation of purgatives in the first days of the disease: they are now often loose; but the evacuations are small and ineffectual,—rarely feculent,—often dark coloured like tar or molasses,—sometimes viscous as bird-lime. The unconquerable desire of changing place and posture, so common in the early stage, and so characteristic of the disease, abates or disappears as the febrile state subsides; and, with the exception of distresses from local disorganizations—and even with these, there is rarely any indication of great personal suffering, a veil of torpor covering as it were the whole expression,—intellectual as well as corporeal. The countenance is calm, but inanimate; the eye heavy; the veins of the tunica albuginea distended with blood as if they had been artificially injected; the aspect hideous,—not wild: the mind is composed, preternaturally firm amidst all the horrors of approaching death,—even preternaturally firm under the conviction that death is certain—and not far distant. Delirium is by no means com-

mon in this form of disease. When it does occur, it is for the most part only a temporary outrage which, passing into convulsion, precipitates into death. The skin, which from the commencement, was thick, compacted, and little sensible to stimulation, loses its animation rapidly from the time the febrile state begins to subside: heat and irritability forsake the surface, particularly at the joints and extremities of the body: the hands and knees become marbled, tawny and brown like a piece of mahogany: livid patches appear on the softer parts, viz. abdomen, scrotum and inside of the thighs, indicating the loss of circulation and life in the part: hemorrhages, viz. oozings of blood from different parts of the body are common, particularly from the nose. The tinge of yellow, which is observed in the white of the eye and some other parts of the body at the time the febrile state begins to subside, usually increases with rapidity, sometimes with such rapidity as to attain the deepest shade,—viz. the colour of an American savage, in the course of a few hours. If the disease terminate fatally before the third day; or, if it do not go through the processes here described, yellowness is a rare occurrence and black vomiting is scarcely ever seen.

The fever which I have now described is the most violent and concentrated of the forms of the sanguine constitution: the outline of the history is drawn from observations made among British military. The disease is concentrated, but it has nothing peculiar in its nature beyond concentration. It is within the

CHAP. III.

power of the medical art to arrest its course decisively at the commencement; or, so to diminish its force as to produce a moderate form analogous to that of continued fever in temperate climates. In this manner the pulse, in consequence of medical treatment of one kind or other, becomes frequent, vibrating, strong and expansive, the vascular action uniformly diffused, the heat equalized, the skin warm, soft and animated throughout, the pains of the head less distressing, though more acute: the eye still continues inflamed, but less surcharged with appearances of inflammation, the countenance flushed, the complexion comparatively clear, the features expressive, the tongue dry, the thirst great—corresponding with the appearance of the tongue; the bowels perhaps irregular, but not insensible to the stimulation of purgatives; and, where vomiting takes place, the matters ejected are often bilious,—such as indicate freedom of action in the organs of the gastric system. Delirium is not uncommon,—it in fact often runs high; in short, the whole train of action, though often of the higher degree of excitement, indicates comparative relief from oppression, accompanied with signs of tendency to a favourable termination by the processes of coction and crisis.—In some cases, the means of remedy employed act so as to establish the existence of paroxysm and remission; and thereby lay the case open to common treatment.

Evolution artificially produced.

Duration and Terminations.

The duration of the more concentrated form, allowed to pursue its own course, seldom extends,

when fatal, beyond the morning of the fifth day: the duration of the mitigated form, whether mitigated by treatment or accident, often extends to the seventh, the ninth, and even sometimes to the fourteenth. The favourable termination is effected through the suppurative process, viz. coction and crisis; the fatal termination through excessive excitement implying organic destructions, vital exhaustions and gangrene; or, by unusual irritation exciting convulsion and producing local oppression or effusion. It sometimes happens, where the febrile excitement is equally conspicuous in every part of the system, that the pulse continues high, full, free and expansive for one or two days, or even more, giving full expectation of approaching perspiration and critical change; but, instead of perspiration, the skin continues closed and dry, the energy of the pulse diminishes, its power of expansion decreases, and all signs of febrile action at last subside in venous paralysis, characterized by oozings of blood from different parts of the body, particularly from the interior of the alimentary canal,—from the mouth downwards. In this protracted form of the disease, there is rarely any appearances of jaundiced yellowness, or of black vomiting: an olive dingy yellowness is however perceivable about the sixth or seventh day, and it increases gradually until the final termination: blood oozes frequently from the whole surface of the alimentary canal for a day, or two, or more before death, and, as appears on dissection, sometimes partially fills its cavity.

CHAP. III.

I have endeavoured to give an outline history of the different forms of the sanguine temperament, viz. mild and regular, concentrated and anomalous as left to itself, or as moderated by treatment; I have only further to add that the remittents, which occur under this constitution, are on some occasions violent, the paroxysms severe, the remissions imperfect. The favourable termination is generally about the seventh day:—the effect is accomplished through the suppurative process of coction and crisis,—the occurrence indicated by free and copious perspiration, pustular eruption about the mouth, or effective, feculent alvine evacuation:—the period of the fatal termination is less certain,—the event, when precipitate effected through convulsion,—when gradual, by congestion,—cerebral or abdominal.

Remittent.

DISSECTION.

Dissection does not show the disease in action; it only shows the ravages which its action commits on organic structure. The following history of dissections is drawn from a large field, viz. many hundreds:—it comprehends the sum of what is seen in cases that have not been opposed, or but feebly opposed by the hand of art.

Brain.

The blood-vessels in the membranes of the brain of those who died of the disease described above were generally numerous and turgid, often distended as if they had been artificially injected. The

dura mater itself was for the most part preternaturally red through the whole, or the greatest part of its extent, more particularly at the falx and parts adjoining to it: circular spots of the size of a dollar, more or less, were often observed near the joining of the coronal with the sagittal suture of a deep red, —sometimes dark as if actually gangrened. Extensive adhesions were not uncommon; and substances like curd or new cheese were observed sometimes near the falx. The substance of the brain itself was firm, often turgid with blood which it poured out at numerous points after the dissecting knife: the choroid plexus frequently resembled an unorganized clot: water was found in the ventricles in some cases, —not in all, not even generally.—In the milder cases of the disease, at least where the disease moved by paroxysms and remissions, effusions of water in the ventricles and into the interstices of the brain were not uncommon,—they constituted the most ostensible cause of death.

Thorax.

The lungs rarely shewed any marks of the ravages of this form of disease, whether continued or remittent; at least, where effects did appear, they were common or accidental.

Abdominal Cavity.

The parts contained in the abdominal cavity were always altered, sometimes much diseased. The omentum and all the omental appendages were of a grey, dirty, olive colour,—dry, without moisture or unctuosity: the blood vessels were distended as if they had been injected; but, there were rarely any marks of what is termed inflammation, or tendency

CHAP. III.

to suppuration. The exterior of the stomach and intestinal canal corresponds in colour with the omentum and its appendages, viz. grey, dry—and marcid as if all exhalation had been suspended,—the blood vessels distended. The appearance of the interior of the stomach and intestines was different in different subjects, and at different places in the same subject. The veins in the stomach were generally turgid: the villous coat was abraded at some places, loose and in the act of separating at most; the surface, underneath the separated villi, streaked with bright or dark red, even studded with clusters of points not unlike measles,—most numerous at the upper orifice, but not confined to it:—certain mouths and canals were also often visible yielding a dark coloured fluid by pressure. The stomach itself was often of large capacity,—sometimes smooth,—sometimes corrugated interiorly. It generally contained a large quantity of liquid, sometimes of the colour of muddy coffee, sometimes of a deeper shade,—sometimes pale and dirty, ropy and viscid with numerous shaggy flakes swimming in it. These appeared, on examination, to be abraded portions of the villous coat.* The interior of the intestinal canal resem-

* The source, from which the matter ejected by vomiting in the latter stages of the fever of the West-Indies receives its black colour, is a point upon which medical writers are not yet agreed. The greater number of them seem to consider the matter in question as consisting of blood mixed with the juices of the stomach. The opinion is mere supposition of probability founded on no direct evidence; on the contrary, contradicted by

bled the interior of the stomach, more particularly the portion of it which bears the name of duodenum. Portions of the interior coat were actually abraded,

---

accurate examination of the fact. Blood exudes from the whole tract of the alimentary canal—from the mouth downwards, and is mixed with the fluid in the stomach and intestines in various proportions in certain forms of the yellow fever, without producing a compound that in any degree resembles the matter of black vomit. This I have myself ascertained by careful examination, and I consider it as demonstrated that the cause assigned is not the true one. The contents of the gall-bladder are changed, in almost every case of the concentrated yellow fever which runs the course described above into a thick black fluid resembling tar or molasses. The fluid may be traced by means of its colour from the gall-bladder into the duodenum, and from thence into the stomach; and, as the colour is diffusible, some part of it may be reasonably supposed to be imparted to the fluids contained in that cavity, whatever these may be. This admixture of the contents of the gall-bladder or secretion of the liver with the fluids contained in the stomach, I considered at one time as the principal or sole cause of the colour of the matters ejected from, or found in the cavity of the stomach after death; but having observed that matter resembling tar or molasses was sometimes voided by stool, under circumstances which showed that its source was not remote, —and where there was no ejection of black matter by vomit, I endeavoured to ascertain the origin; and, in examining the dead body with care, found numerous ducts, particularly in the interior of the colon, charged with a dark-coloured fluid similar to that which, during life, had been discharged by the anus. This seemed to explain the case in so far as relates to the tar-coloured stools; but, proceeding farther with the investigation, similar canals with mouths discharging a tar-like fluid into the interior of the stomach, more especially near the upper orifice, were also discovered in almost all cases where black vomiting

CHAP. III.

and considerable portions of it were loose and in the act of separating, particularly in the colon. A series of vessels underneath the separated villous coat contained, in some cases, a dark fluid like molasses, sometimes thick and viscous; in others, where the continuity of the coat was yet entire, there was an appearance of a velvet or downy substance of a sky-blue or dark purple colour,—in some cases of considerable extent.

The liver was distended, heavy, and generally of an increased size, its colour often variegated like marble,—red and yellow, the blood vessels filled with dark fluid blood, the biliary pores often overflowing with dark coloured fluid. The gall bladder was sometimes full, even distended, sometimes nearly empty, the fluid contained almost always of a dark colour, often thick like tar or molas-

---

had been a conspicuous symptom of the disease.—The appearances alluded to were so often verified by inspection as to place the existence of the thing beyond doubt; and, from the evidence of the fact adduced, I do not conceive myself to be under delusion in giving opinion that the black colour of the matters ejected from the stomach, or discharged by the anus in the latter stages of certain forms of the fevers of the West-Indies, owes its origin to admixture with diseased secretions from the mucous membranes of the whole gastric system, more particularly of the liver. The secretion is ropy and clear during the early periods of the disease: it becomes brown or black in the latter —sometimes black as soot,—more particularly in persons where the head and stomach are simultaneously affected, and where no strong vascular action takes place during the course of the disease.

ses: its course for the most part was easily traced through the duct into the duodenum, and from thence into the stomach; where it appeared to tinge, at least to contribute largely to tinge with black the fluid therein contained.

Spleen. The spleen was generally distended, sometimes distended even to rupture.

Bladder of Urine. The bladder of urine was often contracted to a small size, its coat dense and firm as if it had been long in a state of constriction:—it rarely contained any noticeable quantity of urine.

The appearances noticed above belong more properly to the more concentrated of the continued fevers of the shortest duration. Where the course is protracted, whether by contingency or formal medical treatment, the violence of distention is diminished in organic structure, an opportunity thereby given to the disease to develop a regular febrile action. The excitement, in such case, is principally manifested in the general action of the vascular system; and venous paralysis, as an effect of exhaustion, is then often the ostensible cause of death.—In this case, the intestinal canal frequently contains in its cavity a quantity of effused blood; which, viewed exteriorly, gives an appearance of gangrene of the intestine, but which in reality belongs only to the contents: the spleen and liver are then often gorged with blood; the blood grumous,—without cohesion.

To the general description given above, which, in order to be scientific and comprehensive, must be supposed to exhibit all

CHAP. III.

the circumstances which do occur, or which may occur in fever moving under the influence of a general temperament, and acting on general systems or series of parts, I shall add a few cases of individual history in illustration of the general view. The cases are taken from case books written in hospitals in the presence of the sick, not scientifically arranged and minutely detailed, but useful as illustrative of the fact.—I have selected such as were fatal, that I might have the opportunity of adding to them the appearances that present on dissection of the dead body.

CASE I.

April 9th, 1812. Braithwaite, aged 28, newly arrived in the West-Indies, of a gross habit and heavy countenance, was attacked about six o'clock in the morning, and brought to the hospital about six in the evening. He complained of severe head-ache and giddiness; the face was flushed,—the eyes muddy; he was anxious and restless;—laboured in breathing, apparently from oppression at the præcordia, rather than from impediment in the lungs themselves. The pulse was small, frequent, sharp and contracted; the tongue was foul; the heat great; the skin dry; thirst vehement; pain of the back distressing. He was bled to the extent of thirty-two ounces: a purging bolus was given immediately,—directed to be repeated in four hours and accelerated in its operations by a common glyster. He seemed a little faint after bleeding and expressed ease but no decided relief. April 10th,—passed the night in trouble and distress,—and is now anxious and uneasy about the præcordia; sighs frequently and breathes with catching and difficulty at times; pulse quick and hard, frequent and strong; the skin dry and hot: bled to the extent of fourteen ounces; the skin became moist; the pains remitted, but did not cease. Blisters were applied to the head and stomach:—bowels not freely opened by the purgatives:—calomel and James' powder every third hour; inunction with mercurial ointment;—fever mixture;—fomentations to the extremities. He sweated copiously in the afternoon, had some evacuations by stool and

seemed to be considerably relieved. April 11th,—skin dry; pulse strong, not frequent; thirst urgent; anxiety and sense of burning at the præcordia; nausea and vomiting; ineffective motions downwards; eye and countenance not clear; temper irritable,—impatient,—alarmed at his situation. He does not complain much of the pain of his head, except of the blisters which give him strong sensations of burning: the heat is rather above natural; there is no moisture on the skin; the tongue is rough and foul, but not remarkably so. April 12th,—no progress towards recovery; expectations less flattering than yesterday in time of the perspiration: he vomits occasionally; his nose bled in the act of vomiting;—anxious, restless, extremely uneasy;—pulse regular, full and strong; ideas confused;—countenance assumes a yellow tinge. April 13th,—somewhat delirious; restless and anxious beyond measure; eyes red; gums red and hot; no salivation; pulse regular, full,—not weak; skin obstinately dry; the yellow of a deep shade; eye muddy and surcharged with turgid veins: the blistered surfaces dry and of a dark red colour:—washed with salt and water; frequent small dark viscous evacuations downwards. April 14th,—delirious with extreme restlessness; pulse soft, full and slow; skin damp; heat moderate; vomits glutinous matter of a dark colour.—died about seven o'clock in the evening.

Dissection of the body.—The vessels on the surface of the brain remarkably turgid, giving an appearance of lividness or gangrene in several places: effusions of lymph in quantity, and adhesions between the membranes, particularly near the falx. The mass of inflammation, effusion, adhesion, and engorgement such as is rarely seen. The stomach and intestines contained a great quantity of black matter; in the intestines it was thick as tar, and viscous as bird-lime; the gall bladder was half full of black bile.

CASE II.

Andrew Fraser, aged 30 years and of a full habit, was seized at nine in the evening of the 26th of April and admitted into the hospital on the morning of the 27th. The most striking of

CHAP. III.

the symptoms at that time were head-ache, giddiness and confusion, flushed face and red eyes: the pulse 98, full and strong; the heat 94; skin dry; tongue furred; thirst vehement; body open. Bled to the extent of thirty-four ounces: the pulse fell from 98 to 74; the heat from 94 to 92: Tepid bath: purgatives: blisters to the head and stomach. Evening: pulse 88, full and soft; tongue less foul; head-ache relieved; skin dry; vomiting frequent—the matter ejected only what was drank—lightly tinged with bile. April 28th,—vomiting incessant; head-ache much relieved; pulse 78; heat 91; skin soft, but dry; tongue moist; pulse soft, small,—not more than 86 at the most aggravated period; heat 94; body open; frictions with mercurial ointment and warm oils; frequent small doses of solution of zinc and alum; vomiting incessant. Died at 5 o'clock in the evening, (within the third day). *Opened.*—The dura mater inflamed along the course of the longitudinal sinus,—even to gangrene; effusions of coagulable lymph and adhesions between the exterior and interior membranes: the veins turgid to excess: many inflamed spots on the internal surface of the stomach: much black matter in its cavity: black sooty matter likewise in the gall bladder.

CASE III.

Corporal Gentle, aged 22, of a spare habit, was attacked on the 11th of May, at 10 o'clock in the morning, with violent head-ache and other symptoms of fever: the countenance flushed; the eyes red; the pulse 140,—full and strong; the heat 104 and pungent in kind; the skin dry; the tongue clean and moist. Bled to the extent of 40 ounces,—not much relieved; head shaved and blistered: purgative. May 12th,—head-ache continues; pulse 100,—small and hard; heat 102; tongue furred and dry; eye inflamed; thirst great; body open: the violence of the symptoms subsides and returns irregularly; the pulse becomes more full and less frequent; the skin soft: heat diminishes. Bled in the course of the day, but with little effect: tepid bath: calomel and James' powder: Aq. Ammon. Acetat: camphire. May 13th,—delirious,—with great anxiety; pulse 97, weak and feeble;

tongue covered with a dark brown fur, skin with clammy sweat; bleeding at the nose. Died at 6 in the morning of the 14th, (within the third day). *Opened.*—The dura mater much inflamed and gangrened in the course of the coronal and sagittal sutures: considerable effusions of coagulated lymph forming adhesions on both sides of the falx: the sinuses very turgid with blood: the pia mater much inflamed: the ventricles distended with serum. The stomach and gall bladder contained black matter.

SECTION II.

Febrile Action in the Gangrenous Temperament.

The febrile action, which obtains under the predominance of the gangrenous constitution, has upon the whole a retrograde tendency of more or less rapidity. I shall consider it under two views only, viz. slight and slow, concentrated and comparatively rapid. The endemic fever of the West-Indies is sometimes epidemic without malignity, sometimes epidemic and malignant as influenced by a cause of an unknown nature,—adventitious and peculiar. It is then aggravated in form, rapid in course, and fatal in issue beyond the usual proportion of febrile fatality,—sometimes equal or superior to the fatality of plague.

1. The *mild* form of fever ranked in the retrograde series, and engrafted on the gangrenous constitution, is properly considered as the counter part of the first of the sanguine. It sometimes begins in an insidious manner, proceeding secretly for a day or two without attracting notice; but in general the inva- Invasion.

CHAP. III.

sion is sudden,—the character distinctly perceivable from the commencement. The commencement, like that of most other fevers, is marked by a sense of cold and chilliness, seldom strong, but often of long continuance. The superficial heat is rarely increased beyond the natural standard; sometimes it does not attain the natural standard on the extremities, while it is high, pungent and acrid on the trunk of the body and about the præcordia. The countenance is more or less dark and clouded—grim or livid as in sea scurvy,—dull and without expression: the lips are dry and often bluish; the eye without animation—the white bright, glossy or pearly; the skin usually thick and torpid, of a brown dingy colour, particularly on the extremities;—sometimes it is greasy or damp; and it is sometimes tender of the touch as if it had been bruised: the tongue is often smooth and moist,—sometimes unusually red—the red tending to livid: thirst is irregular; nausea and sickness not uncommon; the pulse is usually small and frequent—not energetic,—it is sunk, or as it were concentrated: pains in the head and loins are sometimes severe,—oftener irksome: the bowels are irregular, generally costive: respiration is often oppressed,—deep and heavy, and sighing without local pain, is prominent among the symptoms;—the whole aspect is unpleasant.

Progress.

The symptoms here enumerated sometimes remit after a duration of about twelve hours: they do not entirely disappear. They recur at a short interval, and they advance to a final termination, some-

times by a regular, sometimes by a less regular process—and with different degrees of velocity. If the course be rapid, the skin and countenance become dark as in deep sea scurvy, the joints marbled and often of the colour of mahogany, the lips dry and livid, the tongue often clean and red, dry, glossy, or shining, the eye glossy, vacant and inanimate. Nausea and even vomiting occur sometimes; but they are not urgent: the bowels are usually open,—the evacuations small, watery and ineffective,—or, loose and colliquative: the discharge of urine is scanty,—sometimes in a manner suspended: the skin is generally dark, sometimes blue as a violet,—it is torpid and little sensible to irritation from blisters or other external applications. The progress to death is often rapid, sometimes completed within the fourth or fifth day; where more protracted, changes occur occasionally in the appearances—for the most part regularly and diurnally. The pulse, for instance, emerges and expands at one time; at another it becomes frequent and feeble, even sinks, so as to be scarcely if at all perceptible: respiration is sometimes free, sometimes so laborious as if suffocation were on the point of taking place: the tongue is often dry, sometimes covered with a black scurf. Where the course is protracted, alternate risings and fallings of the febrile process continue sometimes for ten days, or even a fortnight before the final issue, the patient emerging from danger by slow degrees, or sinking down gradually to death under appearances of stagnated circulation.

CHAP. III.

DISSECTION.

The following appearances were more or less observable in all, or almost all of the persons who died of this form of disease. The veins and sinuses within the head were turgid,—distended with black blood: the choroid plexus appeared sometimes as an unorganized clot; the lungs were frequently black, resembling a sponge filled with blood,—sometimes throughout,—sometimes partially,—in substance sometimes firm and dense, not unlike the substance of spleen. The veins of the omentum and of the external coat of the intestinal canal were distended throughout,—the blood of a dark colour. The small intestines, as viewed exteriorly, often appeared black as if gangrened; the interior was filled with grumous blood,—the coat of the intestine itself not diseased. The liver was often enlarged in size, distended with black blood;—its substance in a manner rotten,—its exterior coat sometimes ruptured by distention: the contents of the gall bladder were often of a pale colour and of a thin consistence: the spleen was generally large,—the coats frequently ruptured,—the interior a grumous mass.

2. The *concentrated* fever of the West-Indies, manifesting its action in the gangrenous constitution, occurs under the operation of inexplicable epidemic causes, or under combinations of artificial local causes of unusual force. To the first we may perhaps ascribe the fever which appeared in the island of Grenada in the year 1793; also that which

appeared in the 25th regiment of foot, quartered on Brimstone-hill in the island of St. Christopher, in the year 1812. These were of the stronger kind; but a disease somewhat similar has occurred epidemically on other occasions within my own observation; and a form of it, arising from local causes artificially concentrated, has often fallen under my notice both in the West-Indies and elsewhere, particularly among the soldiers of the British army.

Invasion.

When the disease proceeds from obscure epidemic influence, the course is only partially affected by obvious causes: when it arises from artificial local causes, as the existence of the cause is within our observation, so to modify or change the form of the action is often within the compass of our power. The occurrence, from artificial causes, is most common in excessively hot and excessively dry weather, in the stagnated, heated and impure air of crowded barracks, or crowded transport ships; more especially where the persons exposed to this annoyance have lived at freedom in open air, or occupied a cool and mountainous district in the country. But, from whatever source the disease may proceed—obscure, or obvious, the course is often rapid, even precipitate, the termination fatal in an extraordinary proportion. The external heat, in either case, is seldom high as judged by the hand, or as measured by the thermometer applied to the exterior; the sensations of internal heat and internal burning are often distressing. The skin is here thick and torpid; the countenance dark and grim, sometimes agitated,

CHAP. III.

sometimes torpid and inanimate,—bloated and without expression,—livid and of a peculiar gloss. The eye is usually clear, white, vacant, with an idiotic drunken-like stare, sometimes it is confused, agitated and protruded. A sense of anguish at stomach, scarcely to be expressed in words is often present, sometimes with nausea,—sometimes without it. Delirium occurs sometimes, and, when it does occur, it is furious,—but it is not common. The pulse is sometimes irregular and irritated, impressing the idea that it is restrained from expansion by some latent cause of resistance;—sometimes it is slow, sluggish, or as it were overwhelmed under oppression. The respiration is more or less disturbed; deep sighing is usual; gasping for breath, or an unceasing attempt to fill the lungs without the power to do it, is not uncommon,—when present, it characterizes an aggravated form of disease. The tongue is often swollen; and, as such, incapable of distinct utterance;—sometimes it is smooth, red, or rather livid; sometimes white and foul with mealy patches; —sometimes foul and leaden coloured.

The appearances now alluded to take place under the tumults of invasion; and, under such tumults, convulsion sometimes supervenes, and the patient dies apoplectic before the close of the first day. But, more frequently the action of the cause assumes an ostensible febrile form; and, under such form, continues to advance with more or less regularity until the third, and sometimes until the fifth day when it usually terminates fatally. Where the dis-

ease assumes the ostensible febrile form, the tumults and agitations of invasion somewhat subside at an interval of ten or twelve hours; and, during the subsequent course, the pulse is variable, sometimes frequent, sometimes slow, sometimes irritated,—never free and energetic;—it is ordinarily oppressed, or struggles as if to free itself from oppression: the functions of secretion and excretion are disturbed: the urinary discharge scanty, sometimes altogether suspended: the bowels are usually bound,—not sensible to the stimulation of purgatives, or irritated to imperfect exertions only by the strongest; in some cases, they are loose, the evacuations ineffective,—watery and without feculence. Restlessness and anguish of suffering are singularly combined with torpor and perverted sensibility. Nausea and retching to vomit are common, even actual vomiting is not rare; but the vomited matters have no peculiar character. Delirium, where it does occur, is generally furious, often connected with tremors and spasms which terminate in general convulsion and death. Respiration is more or less oppressed; frequently oppressed without sensations of local pain. The skin is generally thick and torpid,—not warm, superficially glowing or animated: sensation of heat is notwithstanding ardent and disagreeable at the præcordia: the countenance is peculiar,—dull and heavy, characterized by something of livid glare not easily described.

Progress—irregular.

In two days, sometimes in three, and, on some occasions not sooner than four or five, the febrile

CHAP. III.

Retrograde.

irritation, now alluded to, subsides into a torpor which pervades every part of the system. The skin, which was thick and somewhat livid from the first, now becomes livid and dark like the colour of old mahogany,—sometimes uniformly dark, sometimes marbled. It is cold and impervious, as if it were deprived of circulation and life. The most acrid applications make no impression on its irritability, and the approach of death, in all its horrors, rarely makes any impression on the sensibility of the mind. The countenance, which was always grim and clouded, often of a peculiar livid glare, is now torpid and inanimate; and, where vascular action had manifested any considerable degree of excitement in the preceding course, it sometimes has a deep tinge of disagreeable dirty yellow. There now also appear extensive and numerous effusions, or ecchymosis into the cellular membrane, particularly about the scrotum and abdomen;—the hands, feet and knees are cold, marbled and tawny. Hemorrhage, or rather oozings of blood are observed occasionally at almost every open cavity, but most frequently at the anus: black vomiting and purging of black matter, easily distinguishable from oozings of blood with its contingent mixtures, occur on some occasions near the last hours of life, but not often; and only where the vascular action has been excited to considerable extent in the preceding course of the disease. The aspect of the patient is now ghastly and hideous; and the scene is sometimes closed by violent convulsion, sometimes by gradual stagnation in the circulating

mass—giving a picture of what may be termed passive death.

DISSECTION.

The appearances, in the dead bodies of the victims of the concentrated form of fever now described, differ only in degree from those last noticed. The veins and sinuses within the head are generally filled with black blood; the cells of the lungs completely gorged with blood—black and dissolved; the liver generally increased in size,—its substance putrid or rotten,—its coat often ruptured from the distention of the interior mass: the appearances of the spleen are for the most part similar,—its coats ruptured,—its interior a mass of gore. The mesenteric veins are generally distended with black blood; and black and grumous blood is often effused into the cavity of the intestinal canal, particularly into the small intestines; in a word, the blood—black and dissolved, is every where collected in the larger veins, or forms masses of gore in organs of spongy structure.

Head.

Thorax.

Abdominal Cavity.

PERIODIC.

I have given an outline history in the preceding pages of febrile irritation of the continued form of fever in the gangrenous temperament. I shall now notice cursorily its more common proceeding in forms that are more distinctly periodic,—and which, according to my own observation, are not of rare occurrence. The disease presents itself most commonly

Invasion.

CHAP. III.

in excessively hot weather, in wet and ill ventilated situations, or, in situations that are dry in themselves, but that are exposed to the direct current of winds that pass over noxious swamps. It is also common and aggravated at the setting in of the north winds in November, especially among persons who are stationed on heights, or on gorges between heights in the vicinity of swamps or marshy grounds. The type is most usually single tertian,—anomalous and anticipating by long anticipations,—frequently by not less than ten or twelve hours at one time:—the description here given refers to the disease in its more aggravated form.

Progress.

The cold fit, which ushers in the greater number of periodic fevers, occurs in this with circumstances that are in some degree peculiar, viz. irregular sensations of cold, comparatively of long continuance—continuous and dead,—or without the intervals of lively heat that occur in intermittents of a common character. The hot fit, which establishes itself after a comparatively long interval, is not after the usual form; the sensations of heat are deep and concentrated,—ardent about the præcordia—not equally diffused to the surface and extremities, and not such as give an idea of active movement in the matter of of life. Pains in the loins, knees and legs are often excruciating, accompanied with more or less of spasm or cramp. The pain of the head is sometimes severe,—irregular, shooting from part to part with rapidity; sometimes it is more fixed, obscure and dull. The tongue is white and moist—with mealy

patches, sometimes large, swollen, and of a leaden colour,—sometimes of an appearance as if it had been parboiled. Thirst is variable,—increased or deficient. Nausea and vomiting occur sometimes: the vomited matters are rarely bilious; the nausea is sometimes distressing,—the character different from that of common nausea, but not easily defined. The body is costive,—the bowels obstinate to purgatives; if otherwise, the stools are loose and watery,—and irregular. Anxiety at the præcordia, inflation of the hypochondria, deep and heavy sighing are common; —they are among the characteristic signs of this form of disease. The countenance is dark, dingy and livid; the eye, for the most part, protruded, glossy and inanimate. The skin is thick,—without usual sensibility to the stimulation of blisters, or other irritation. The blood sometimes actually stagnates under the nails during the cold fit, leaving a blackness which grows out like a blemish in the course of recovery; or the extreme joints of the fingers and toes separate and fall off—as gangrened by the first impression of the diseased action.

Termination.

Death sometimes takes place by convulsion or apoplexy in the first paroxysm; but, where that does not happen, the powers of life emerge at a certain point, the pulse expands, a partial and imperfect perspiration—with a remission more or less distinct ensues. The paroxysm often recurs unexpectedly before the regular hour of invasion. The blood stagnates in one or other of the more important organs,—and death is the consequence; or the

CHAP. III.

stagnation resolves, either of itself or through medical aid, the powers of life and circulation emerge; remission or intermission takes place, and recovery, either immediately, or after some recurrences similar to that described, is sometimes effected.

The countenance is cloudy and overcast in this form of disease, as if the patient was under the impression of some dismal passion,—anger or revenge; hence the name malignant naturally attaches to it.

Remark. The perspirations which terminate the paroxysm, or which mark the emergence, are not copious, warm and fluid: the intermissions are not perfect, such as indicate a solution of disease, or as give confident prognostic of security. The fatal paroxysm is frequently ushered in by sudden qualms, or impressions of inexplicable anguish at stomach; and it often terminates by convulsion, apoplexy and coma. Jaundiced yellowness occurs sometimes; and, when it does occur, it is of a dark shade. The disease is often fatal: if, the event be favorable, the febrile action assumes a new character, either as an effect of medical treatment, or of some accidental contingence to which the subject has been exposed.

DISSECTION.

The basis of the appearances on dissection are here the same as in the preceding; only, as the violence is often more sudden, the marks of distention

Head. are more obvious and prominent. The veins and sinuses within the cavity of the cranium are distended

with black blood; the ventricles and interstices of the brain often overflow with coloured or colourless fluid: the cells of the lungs are more or less filled with black blood: the liver is, for the most part, greatly increased in size,—its substance frequently a mass of gore, its coats ruptured and rotten: the spleen is often three times its natural size,—rotten, so as not to bear to be handled,—its coats ruptured, —its contents sometimes like blood half baked in an oven.

Lungs.

Liver.

Spleen.

CASE I.

August 15th.—King, attacked in the night with coldness and shivering, head-ache and violent pain of the loins. The pulse is now quick and frequent, and there is a general sense of soreness over the whole body. An emetic was given immediately: the head was shaved and blistered: calomel and antimonial powder after the operation of the emetic: mercurial ointment rubbed upon the legs and thighs. Evening,—the skin cool and damp: the pain of the head less urgent. August 16th,—the head-ache severe: the pains of the loins abated: the tongue clean, dry and glossy: the eye clear, white and vacant: bowels costive: calomel and mercurial frictions repeated. August 17th,—severe pains of the legs and thighs: vomits sometimes: the pulse weak, easily compressed, and not more frequent than natural—heat moderate—frequent sighing—deep breathing—moaning—the countenance grim and cloudy—livid as in sea scurvy—the eye muddy—the gums spongy, as if from mercury;—no appearance of salivation: stimulants;—calomel and mercurial friction continued. Evening,—the tongue clean,—dry; the pulse small and confined. August 18th,—the countenance grim and dusky; the lips and teeth dry as if parched; the skin dry; the bowels open—vomits sometimes—eyes muddy,—dull: frequent sighing and deep breathing. August 19th,—the skin blue as a violet.—Died about two o'clock. —*Not opened.*

CHAP. III.

CASE II.

December 7th.—Lecky, seized in the morning about eight o'clock with giddiness so as to fall down: severe head-ache, chilliness and other symptoms of fever. Bled (the quantity not stated); emetic immediately after the bleeding. December 8th,—very ill: no symptoms detailed: a blister to the nape of the neck:—calomel and James' powder. December 9th,—extremely restless during the night: pains in every part of the body,—rejects drink and medicine; breathes short as if he had not power to expand the lungs: blister applied to the stomach: distress great, but not easily described as not referable to a particular part: skin and countenance of a dingy violet colour: the tongue rough and foul: the pulse small and frequent: the skin moist and damp,—not animated and warm: strangury troublesome; bowels torpid; eye downcast. Bled (quantity not stated), the blood flowed reluctantly, of a remarkably dark colour,—did not separate into parts—relief, or as he termed it lightness at heart. Frictions with mercurial ointment, camphorated julep—with white vitriol at intervals. The julep was grateful to the stomach; it removed the anguish and repressed the hickup and vomiting which had been troublesome. Evening,—more apparent ease; the pulse sometimes full, free and expanding; sometimes small and confined: perspiration sometimes warm and fluid; sometimes clammy and unpleasant: the eye glossy: the tongue black but moist: beverage of imperial. December 10th,—no sleep—wanderings in his slumbers,—startings: the pulse small and confined: the countenance more livid—lividness at the edges of blistered places very deep: dusky tinge of yellow about the neck: the tongue black and moist: the hypochondria tense: the breathing laborious: bowels costive,—obstinate to purgatives: the lips dry: thirst considerable: gums red as if affected by mercury: extremities cold: pulse small and weak,—not frequent: vomits sometimes; the matters vomited clear and ropy. Noon,—eight ounces of blood drawn from the arm; the blood dark in colour,—some relief,—the pulse more dis-

tinct. Evening. Three or four large black stools: no vomiting: the pulse more distinct; breathes thick; hypochondria tense. Delirious about ten,—furious,—convulsed.—Died about midnight.

SECTION III.

Phlegmatic Temperament.

The phlegmatic temperament, whether a property of original conformation, the product of times and seasons, or of other less certain contingency, modifies the character of a numerous train of diseases that arise from the action of a febrile cause. The knowledge of the form and manner of proceeding of diseases moving under this influence, whether simple or combined, is important to the practical physician. The investigation is difficult; but, whatever difficulty there may be in it, the importance of penetrating to the truth strongly solicits attention to it. I shall therefore, in so far as I am able, endeavour to discriminate the characters of fevers which move under this form of temperament, perfectly aware that the degrees and complications are numerous, and that what I say will only be understood by those who, in a manner, domesticate with the sick, and who observe, with a scientific eye, all the movements and changes that occur,—at the bed-side of the patient.

Character.

The character of the phlegmatic temperament may be distinguished, for the most part, by a thick and torpid state of the skin,—dry, or clammy and

CHAP. III.

greasy, deficient in warmth and animation. The tongue is often whitish and slimy; sometimes moist, clean and smooth; the saliva viscid and tough,—so as to form sordes about the teeth. The blood is less warm and florid than in the sanguine habit: it is sometimes of an azure colour as it flows from the vein; and it exhibits, when cooled and suffered to rest, coagulable lymph on the surface in different degrees of density and compaction.

Division.

The cause of fever, as acting on the phlegmatic temperament, presents itself in three prominent forms, viz. 1. a form of moderate violence, directly febrile; 2. a form of concentrated force, directly febrile likewise; and, 3. a form of action, generally and constitutionally perverted—not limited in duration; and, according to the ordinary meaning of the word, less ostensibly febrile than the others. The disease, under whatever shape it may appear, is more common in some seasons of the year than in others. It prevails in certain places and districts of country to an extraordinary extent; and it sometimes appears epidemically and acts fatally where no ostensible cause can be assigned for its appearance.

Invasion.

1. The commencement of the *slighter* degrees is generally known by disagreeable sensations at stomach,—pain, nausea, flatulence, clamminess of the mouth, unpleasant taste, deficiency of warmth at the surface and on the extremities,—a sense of long continued cold rather than horror and shivering. The eye is dull, the vision frequently obscured, the countenance generally pale and inanimate—rarely

clear and expressive. Pain of the head, a symptom common in febrile diseases, is sometimes sharp and severe;—often dull, accompanied with sensations of confusion and giddiness and clouded perception. There are also sensations of pain in the back, in the joints and limbs, but they are irksome oftener than acute. The pulse is frequent and small in some cases,—soft, moderately full, and scarcely more frequent than natural in others; in all, it is unexpansile,—without energy and force. The skin is, for the most part, dry; sometimes it is clammy, damp and greasy; the heat is rarely high,—sometimes less high than natural on the extremities, above natural on the trunk of the body,—rarely lively and animated. The tongue is seldom foul to any great extent; the thirst is rarely great; the mouth is clammy —with an insipid mawkish taste: the teeth are often dry, covered with a slight pellicle or crust. Secretions and excretions are irregular,—diminished for the most part;—rarely increased in quantity or materially changed in kind.

Progress.

The most of the symptoms now noticed appear within the first twelve hours from the time of invasion; and they, for the most part, increase progressively with diurnal risings and fallings for five days, oftener for seven; when a change favourable or fatal usually takes place. The symptoms are rarely urgent, or such as occasion alarm. The tongue is generally moist, more or less foul,—sometimes mealy, —sometimes, but not often, rough and dry; the teeth are generally dry, their roots incrusted. Nausea is

CHAP. III.

not uncommon,—sharp pains and vomiting of viscid matters occur sometimes. The bowels are often costive; when otherwise, the evacuations are small, watery and ineffective, rarely feculent and copious: the urinary discharge is irregular;—the urine thin and crude with loose and floating clouds. The eye and countenance are often dull—deficiently animated: the countenance is pale and pasty; the eye clear,—sometimes pearly white, sometimes lurid. The skin is thick and dry, or damp and greasy,—deficiently animated and little irritable; it does not rise freely with the application of blisters, or it does not continue to yield a serous discharge for more than the first or second day. The pulse is often, but not always more frequent than natural; it is usually regular in time, sluggish and unenergetic in manner. The head is often muzzy,—the ideas confused; sleep is irregular,—there is watchfulness or dozing without refreshment.—The body does not waste proportionally with the usual wasting of the body in acute disease.

Termination.

When things have proceeded for five days, oftener for seven in the tenor here described, the action of the vascular system begins to develop, and it often develops with effect: the skin relaxes, perspiration becomes free and general, eruptions appear about the mouth,—with more or less of sediment in the urine. The foulnesses, which covered the tongue and the sordes which covered the teeth, separate and disappear entirely; sleep refreshes; appetite for food returns; in short, the marks of crisis are evident, and the disease ceases, either finally or temporarily.

—If the termination be not final, the symptoms recur; and they sometimes recur under a different form from that of the original:—they sometimes assume the retrograde. If the recurrence happen on the eighth, the new disease proceeds progressively to the fourteenth; sometimes terminates finally on that day by regular crisis, sometimes changes form, proceeds to the twenty-first under influence of the new type; terminates finally, or changes and proceeds to a more distant period—subject to septenary changes through the whole of its course.

DISSECTION.

The appearances, observable on dissection, are little striking. The changes are obscure, but changes do exist, and they are to be found under the following heads, viz. obscure adhesions among the membranes that cover the brain, more particularly conspicuous near the falx. The changes which take place in the substance of the brain itself, are seldom discernible to the eye; if the course be rapidly fatal, the substance is often preternaturally firm; if slow, it is often flaccid: the veins which run upon its surface are usually distended with black blood, and there is often more than the usual quantity of water in the ventricles, sometimes almost a dropsy. The omentum, the omental appendages and the membranes which line the abdominal cavity are dry,—without superficial moisture or unctuosity. Adhesions exist in several places between contiguous membranes in all parts of

CHAP. III.

the body; and, there is generally more or less of congestion or apposition of new matter in the substance of the liver—and sometimes of the lungs. The veins which run on the surface of membranes are generally turgid; and, there is almost always a quantity of coagulated lymph in the cavity of the heart and larger vessels near it: the venous blood is usually black and fluid.

2. The basis of action is the same in the *concentrated form* as in the preceding; the degree only is higher. More or less of an undefinable indisposition is felt for hours or days on some occasions—previous to the formal attack; the attack is sudden as a stroke of lightning in others—the commencement marked by giddiness, sometimes by dimness of sight, even by temporary blindness. Pain of the head, of one kind or other, is almost always among the primary symptoms; the pain is sometimes heavy, and oppressive; sometimes acute, tensive and scarcely supportable. Faintness is not uncommon—even actual fainting occurs sometimes; nausea, disagreeable sensations at stomach, vomiting and severe retchings are usual:—they are often simultaneous with the first feelings of pain in the head. Pains of the loins, knees and legs rank among the symptoms; they are often severe, irksome and deep seated. The sensations of cold, so common at the commencement of fevers, are here somewhat peculiar—disagreeable, deep seated and in a manner stationary, seldom intermixed with flushings of heat.

Invasion.

The heat which succeeds to the cold is slowly established: when established, it is seldom of a high scale on exterior surfaces; it is often sharp and pungent at the pit of the stomach, under the arms and on the inside of the thighs. The skin itself is usually dry,—it is withal soft and inelastic; if not dry, it is damp, greasy and deficiently animated. The pulse is small, confined, without force and energy in some cases; in others, frequent and irregular; in many, not perceptibly changed from the pulse of ordinary health, except in deficiency of force and energy. The countenance is usually inanimate; sometimes sallow and lurid, sometimes full and bloated—without expression; the white of the eye is often dingy, sometimes of pearly whiteness,—the eye itself heavy and sluggish in its motions. The tongue is sometimes rough and white,—milk white—an appearance connected with thirst and nausea; sometimes it is pale and smooth,—the saliva glutinous, ropy and adhering to the teeth. The bowels are irregular; the body often costive; sometimes loose,—the evacuations small and ineffective: the urinary discharge is scanty—sometimes in a manner suppressed.

The above are the more prominent of the symptoms which occur during the formation of the disease. A partial moisture, with partial abatement, is usually observed at the expiration of twelve or fourteen hours; but it is seldom of long duration. The febrile action recurs in a short time; and, when it recurs, it proceeds for the most part with diurnal risings and fallings, or with periodic remission and exacer-

Progress.

CHAP. III.

bation to a final termination—favourable or fatal. In the progress of the more concentrated form, the pain of the head is sometimes severe, but not always; there is however always more or less of confusion and dulness of perception. The countenance which was sallow, often lurid and bloated from the commencement of the indisposition, becomes dingy and inanimate as the disease advances, sometimes more suddenly, sometimes more slowly. It is often full —and torpid as a block of marble; sometimes dry and pasty; sometimes damp and greasy. The eye, from the beginning, dull and heavy, gradually loses animation and lustre: if vascular action has been considerable at the early stage, its veins sometimes become distended as if they had been injected. The lips are usually dry and often pale; the mouth clammy; the tongue foul,—sometimes dry; thirst irregular,—sometimes great, sometimes little urgent. Unpleasant feelings at stomach and pain upon pressure are usually present in the progressive stage; nausea on some occasions, vomiting of viscid and ropy matters on most. Delirium is not common; but it does occur sometimes,—at least abstraction, wandering and forgetfulness. The mind has no force of conception; and, with the appearance of sleeping, there is no actual rest. The pulse is seldom frequent as a febrile pulse; it rarely rises to one hundred strokes in a minute; and, it is moreover deficient in force and energy. The skin is thick and torpid—seared, not vesicated by the application of blisters;—and the body does not waste.

CHAP. III.

Termination.

The disease, formed and proceeding in the manner described, attains its crisis or termination at different periods of time according to its different degrees of intensity or mode of direction. In some it terminates fatally by convulsion or coma at a very early period; in many, not until the seventh day, sometimes not until the fourteenth, or later. The fatal process sometimes advances silently, and so insidiously that the unexperienced, and even many of the experienced are taken unawares,—surprised by the supervention of fatal symptoms when they apprehend no danger. The pulse in this form of disease is, for the most part, a fallacious guide. It is seldom much changed from the pulse of health, unless by marked deficiency of quickness and energy in the mode of pulsation, or by something of irregular irritation. From a calm and uniform tenor, it ordinarily retires silently from the surface and extremities of the body, loses force and expansion throughout, intermits and finally ceases. The skin, which was never of an ardent heat superficially, becomes cool during the subsiding stage,—dry, inanimate, impervious, more resembling a dead hide than the skin of a living man: if not dry, it is damp, flaccid, inanimate,—without sensibility or power of reaction. Its colour is not strictly speaking yellow like the colour in jaundice; it is of a dingy grey and dirty olive,—sometimes similar to the colour of parts that are recovering from the injuries sustained by bruises. The appearance of the white of the eye is somewhat analogous to that of the skin,—

Retrograde.

CHAP. III.

marcid, resembling the colour of old tallow rather than bright or deep orange indicative of absorbed bile: its veins are often distended,—its aspect peculiarly impressive of a forlorn condition. The mind is more or less engaged; for the most part, unusually firm, or rather indifferent to the approach of death in all its horrors. Hemorrhage, or droppings of blood from the nose; oozings of blood from the gums, frequently from the whole tract of the alimentary canal,—from the mouth downwards are frequent in this form and this stage of disease; and, where this last form of hemorrhage takes place, the tongue is generally rough and dry,—with a taste of sweetness in the mouth unsufferably loathsome—and often accompanied with considerable thirst. Nausea and unpleasant sensations prevail at stomach throughout the whole course of the disease: vomiting is not unusual; but it is rarely distressing or severe. The matter ejected is for the most part pituitous and ropy,—numerous shaggy flakes float in it; sometimes clots of blood, entangled in portions of the mucous membrane, are brought up by gulping rather than by vomiting: worms make their escape by the mouth on some occasions, some living, others dead and of a very red colour. The bowels, during this stage, are usually open, the stools for the most part bloody and fetid,—sometimes pure blood, sometimes blood enveloped in portions of mucous membrane. The urinary discharge is usually diminished in quantity, sometimes entirely suppressed,—the suppression accompanied with un-

availing desire to make water without evidence of the presence of water in the bladder. The intellect is often disturbed, confused and embarrassed in this latter period; but delirium, properly so called, is a rare occurrence. Death is sometimes sudden—effected by convulsion; its approach is oftener gradual,—the event such as may be easily comprehended from the preceding detail.

Periodic.

Besides the continued form now described, the periodic fever of concentrated force, manifesting paroxysms and remissions at regular periods, more or less distinct in the circumstances of their history, is by no means of rare occurrence. The proceeding may be apprehended, in some degree, from what has been now said:—the presence of the paroxysm is known by oppression of the pulse; the remission by expansion and emergence. These occur at fixed periods:—the fatal termination is usually effected through convulsion or coma

DISSECTION.

The appearances vary in the dead body according to the nature and condition of the course—rapid or slow. If the course be rapid, terminated by convulsion or coma, there are often marks of congestion in the brain and even in other organs.—The dura mater is rarely inflamed; that is, red, as tending to suppuration or gangrene: there are often elongations or strings of coagulated lymph, between it and the interior membranes, spreading extensively on the sides

CHAP. III.

Head.

of the falx. The substance of the brain itself is firm, as if rendered solid by the apposition of new matter; and, where that is the case, there is for the most part an unusual quantity of water in the ventricles. Where the course of the disease has beeen protracted, the marks of adhesion are less conspicuous: the interior membranes and surface of the brain are then sometimes dry, the substance grey, flaccid, marcid, even sometimes soft and liquescent: the superficial veins are often turgid with black blood,—the plexus choroides often a clotted mass: the ventricles contain an unusual quantity of water in most cases, particularly where the disease terminates by convulsion; or where it moves by paroxysm and remission: sometimes the interior surface is dry, shrivelled and parched. Coagulated lymph is often, indeed

Heart.

almost always found in the cavity of the heart and larger vessels;—the venous blood is then black and fluid. The membrane which lines the cavity of the abdomen is usually of a dark grey, dusky colour; the omentum and its appendages have a marcid

Intestines.

appearance, resembling old tallow. The exterior coat of the intestines is dry and of a faded green colour, the superficial veins distended with black blood. The interior cavity contains blood effused—in some parts more than in others,—but without marks of deranged structure; sometimes the inner coat is loosened,—partially separated and filled with blood. The interior of the stomach is in some respects similar to the interior of the intestines. It

contains in most cases a ropy, dirty and sometimes frothy fluid, in which float numerous shaggy flakes, some of them enveloping exuded blood. The liver is sometimes distended with adventitious matter, sometimes soft and flaccid as if tending to solution,—its blood black and without cohesion. The contents of the gall bladder are sometimes thin and of a dirty unnatural colour,—sometimes thick, firm and of the colour of amber or gum-arabick, sometimes black as tar. The spleen is soft and flaccid, sometimes large, rotten and ruptured. The bladder of urine is often contracted in size, its interior surface sometimes studded with clots of blood enveloped in the mucous membrane.

Gall Bladder.

Spleen.

Bladder of Urine.

CASE I.

John Adams, aged 28, of a spare habit, was seized on the 6th of May at eight in the evening, and admitted into the hospital on the morning of the 7th. He complained of slight headache, the pulse 82 and soft; the skin dry; the tongue furred; thirst considerable; pains in the limbs:—purgative—followed by repeated doses of calomel and James' powder. May 8th,—pulse sunk so as to be scarcely perceptible; pupil insensible to light; breathing stertorous:—head blistered:—camphorated mixture with opium and ammonia.—Died about 12 at night, (little more than two days). *Opened.*—The dura mater along the whole course of the longitudinal sinus inflamed, even to gangrene; considerable effusions and extensive adhesions between the membranes of the brain; the sinous veins turgid; the ventricles full of serum: the substance of the brain itself very flaccid; the vessels of the omentum turgid; the liver remarkably hard as if schirrous and of a deep yellow colour; the stomach not diseased apparently:—black matter in the gall bladder.

CHAP. III.

lapsed,—not clear: the skin moist and warm; the pulse more expansile; the tongue more moist; saliva about the mouth:—no salivation. Evening,—feelings more comfortable; skin moist; the moisture fluid; complexion brightens; no vomiting; appearances more promising; several scabs like eruptions beginning to dry about the mouth and other parts of the face. October 19th,—tolerable night; threw up the porter which he had, for the most part, hitherto retained; stools liquid,—brown without feculence; tongue rather moist; no salivation, the gums hot, red and painful; the pulse strong, hard, irritated, regular in time but as it were insulated; skin warm and moist; countenance lurid; no sign of approaching crisis. Evening,—six or eight ounces of blood were drawn from the arm,—the blood buffy in the extreme; the coagulum firm and in small quantity; the pulse less irritated and more connected with the system after the bleeding; the skin moist; the heat natural; no salivation; numerous pimples on the thighs where the mercurial ointment had been applied:—weak and weary,—uncomfortable without local pain; starts when he sleeps as if slightly convulsed: æther with laudanum: fifteen grains of burnt alum every four hours. October 20th,—slept quietly and comfortably the greatest part of the night without starting or vomiting: two feculent evacuations by stool; urine in quantity; tongue moist,—still thirsty; no desire for food; relishes brandy and water; eye clearer; countenance bright; skin moist—even to perspiration; pulse rather frequent and small, but energetic. About noon rose up to the night chair being unwilling to make use of the bed pan, fainted convulsively; recovered, but begun to breath with labour and difficulty.—Died about eight in the evening. *Opened* next morning about seven.—The blood vessels in the brain were rather full and distended; the substance of the brain itself was more firm than usual, but no marks of local inflammation, either suppurative or adhesive were discernable. The inner surface of the stomach, particularly near the cardiac orifice was covered with a dense villous covering, more compact than natural and of a somewhat azure colour: the membrane below red or inflamed, speckled

and streaked as patches of measles, or miliary eruption, viz. inflamed secreting surfaces tending to gangrene in some places. The small intestines, particularly the duodenum, were in a similar state with the stomach. The liver was sound; the gall bladder distended; the omentum thin,—the colour rather grey and dingy.—There was no apparent congestion any where, if the unusual firmness of the brain be not deemed such; no effusion of watery fluid, and no marks of putridity.

CASE III.

May 21st.—A man of the 4th batallion of the 60th was sent to hospital in the morning, ill of a very violent, at least dangerous fever: he was bled largely,—somewhat relieved: the pulse still strong and frequent: bled again largely in the evening; the head shaved and blistered.—Calomel and colocynth—with a solution of salts:—bowels not opened; pulse frequent, quick and obscure; skin dry;—no sleep. May 22nd,—slept a little,—sweated a little, but not freely; had many evacuations by stool,—according to his own account twenty or thirty; no pain or uneasiness; the pulse frequent, quick, not expansile; the lips dry; the skin not relaxed; eye and countenance clear; tongue not foul; thirst moderate. Evening,—no better; pulse frequent, small and quick; heat above natural; skin moist, but not freely so;—sighs, changes posture often; increased thirst; uneasiness at stomach. May 23rd,—uneasy in the first part of the night,—vomited two or three times,—restless: a blister applied to the stomach:—thirst; pulse frequent and quick; skin now warmer and more relaxed;—no critical perspiration. Evening,—sickness,—nausea; bowels very open,—purged; tongue foul and white; no particular pain; pulse frequent and quick. May 24th,—slept in appearance; says he is easy and well; the pulse scarcely to be felt,—obscure and indistinct; the tongue somewhat foul, but moist; the eye clear; the countenance composed; the heat natural; the respiration easy; the skin soft and moist. Evening,—the patient died at noon without delirium, convulsion, or other expression of uneasiness, ex-

CHAP. III.

cept the conviction that he would die very soon. *Opened.*—No inflammation on the external surface of the dura mater; internally there were strong adhesions to the parts below, particularly near the falx, with effusions of coagulable lymph below the interior membranes. The ventricles had more than the usual quantity of fluid; but, there was no unusual turgidness of the blood vessels. The right lungs adhered slightly to the pleura; but the adhesion did not appear to be recent. The heart was large, and the left auricle was so filled by a firm amber-coloured coagulum, as must have almost entirely stopped the passage of the blood. The stomach contained the liquid that had been recently drank—not changed in colour;—there were some inflamed patches on the inside. The liver was large, distended with black blood,—black as tar and without cohesion: the gall bladder contained black bile in considerable quantity: the intestines were sound:—there was a slight tinge of yellow on the skin,—not perceivable till after death.

CASE IV.

September 13th.—A young man—a sailor, on the passage from Jamaica to North-America, was seized with fever about the 2nd of September. He had been ill three days before he was seen; and, as there was not a lancet on board of the ship where he was, the disease pursued its course with little interruption. September 5th,—he complained of pain in the head; the pulse was febrile, frequent, concentrated, or deep seated; the skin thick,—compacted, dense and dry; the heat above natural, but not high; the eye clear, but not animated; the countenance heavy; the tongue white as if meal had been spread upon it,—the covering not uniform nor thick; thirst considerable; nausea of a peculiar kind: he vomited and brought up a dead round worm of a large size; no retching; bowels torpid; no sleep. Salts were given, but did not operate:—some motions procured by jalap and calomel; the head-ache, or heaviness of the head not relieved; no sleep; a blister to the stomach. September 6th,—blister to the neck. Towards evening, the skin

became soft and moist; and, according to his own report, he sweated a little,—but there were no marks of critical sweat. The skin remained thick, dense and torpid;—there was no buoyancy in the pulse; the tongue was clean; the eye clear—but without animation; the thirst moderate: the purgative operated plentifully; no sleep; no desire for food. September 8th,—the symptoms recurred, and though paroxysms and remissions were not distinct, a type was notwithstanding observable:—it was double tertian. The paroxysms were marked by languor, a disposition to sigh, increased frequency, and, at the same time, obscurity of pulse; the countenance pale and bloated,—statue like without animation; the lips pale; the skin torpid. The remissions were known by a slight expansion of pulse, a slight moisture on the surface,—not critical sweat: delirious in the nights of the 9th and 10th of September; the countenance inanimate, fixed and pasty; the lips pale; teeth dry; tongue not *foul*; no complaint of pain; no sickness at stomach. He revived in the course of the day;—the pulse more open and slow; feeble pustular eruption on the chin. September 11th,—worse during the night; sighs frequently and heavily; countenance dry and pasty, pale and inanimate; pulse frequent and small; heat deep seated, but not great in degree; skin dingy; severe pains in the hips and thighs in the evening;—they abated after the parts were rubbed with laudanum and spirit of ammonia, some laudanum and a little brandy being given internally at the same time. September 12th,—somewhat easier; slept towards morning; pulse more expanded; no crisis, or appearance of it; countenance inanimate; eye clear, but dull and heavy; languid in its motions: the paroxysms known by depression and distress; the remission by emergence and somewhat of energy: all the faculties are torpid and as it were obscured; there is no delirium. About one o'clock, seized with a paroxysm;—not sensible; pulse very frequent and small; skin dry; countenance inanimate; skin of a dingy pale; teeth and lips dry; body not wasted; revived a little towards evening; sensible. September 13th,—rather more animated; the pulse more expanded; the skin softer; the lips more moist and less pale; heat equal; no crisis; somewhat of

CHAP. III.

more promise. About six in the evening, seized with severe excruciating pains in the hips and thighs, hurried breathing,—pulse small—irregular: died about eight.—*Not opened.*

Constitutional Cachexy.

3. A febrile cause acting on the phlegmatic temperament pursues, as described above, a strictly febrile course, terminating favourably or fatally according to the law which influences movement in ordinary febrile diseases. There is a primary tendency to accretion or apposition of new parts throughout, the effect, agglutination and adhesion in the substance of organs, or between contiguous membranes. The character of the action sometimes changes at an early period: the agglutinating tendency resolves and the disease terminates favourably by crisis, fatally by liquescence; or, the process of accretion proceeding rapidly and irregularly, the function of one or other of the organs essential to the continuance of life is impeded or oppressed, and death takes place prematurely, that is, before the action has attained its full development. This, I trust, the reader will comprehend from what has been said above. What follows is less obscure: it is capable of being submitted to ocular demonstration in all its stages, though it has not perhaps as yet been so submitted. The mode of action, included under figure 3, (viz. constitutional cachexy,) proceeding from the influence of a general febrile cause, is to be considered as a genuine febrile act; but its manner is

peculiar, in as much as it exhibits a slow and gradual perversion of the processes of accretion and nutrition:—the course is sometimes progressive and accretive; sometimes retrograde and liquescent.

Locality.

The cachetic form of general endemic fever occurs frequently in some quarters of the globe, rarely in others. It is most common in countries which abound with moisture, particularly the moisture of fresh water rivers and inland lakes. It is more common in hot countries and in the hot months of summer and autumn than in cold regions and the winter season: it is thus frequent in the interior of Guyana at some distance from the sea, in the vicinity of the interior lakes of North-America,—in various islands in the West-Indies in districts that are contiguous to swamps; and, among these, in the island of Trinidad in a more eminent degree than others. Where the cause is most concentrated, the action is often retrograde from the commencement,—the course rapidly fatal; where the cause is diffused, the action is progressive, the course tedious,—protracted to months and even to years. The type is oftener periodic than continued; at least where the action is progressive and its degree of inferior force.

History—common.

Its more common history, in so far as I have been able to learn from observation or from the official reports that I have received on the subject, is the following.—A disease of febrile form commences usually in the manner of intermittent or remittent. The paroxysm subsides in a given time; but it does not terminate by copious evacua-

CHAP. III.

tion, viz. perspiration or purging, as the paroxysms of regular intermittents or remittents usually do. The disease recurs again, and it again subsides; but the accessions and the remissions become less distinct in every succeeding revolution, the patient continuing to exhibit the characters of the action of a febrile cause, though not under the common febrile form. This is the more common mode under which the disease makes its first appearance; but it is not the only one. A person for instance, excessively heated and fatigued, is seized suddenly, usually after imprudent exposure to a stream of cold air, with langour, faintness, thirst and other feelings of indisposition which he cannot easily describe; and which the physician is often unable to understand. The pulse is frequent, quick, often sharp and irritated,—the movement peculiar, its order disturbed and accelerated to a considerable degree of frequency by the slightest bodily exertion. The subject often remains for eight days, a fortnight, even longer under this ill defined indisposition,—febrile in its essence, though not characterized by the ordinary febrile signs, or proceeding to a termination through the customary febrile channel. It establishes its own mode of perverted action through the whole extent of the system, appearing to change, and, in some manner, to new model the whole processes of organic life,—more in some parts of the body than in others.*

History—varied.

* General cachexy is more common in flat countries near the banks of fresh water rivers or fresh water lakes, than in

It thus constitutes a constitutional cachexy, which makes no effort, by the act of its own operation, to assure a defined critical termination. Hence the duration of the disease is often protracted for years, its course rarely arrested, or its tendency averted by the ordinary aids of the medical art:—the condition of health is valetudinary,—existence in some manner artificial.

Progress.

When the first tumults are past, or settled into the constitutional form of action which constitutes the disease, the patient rarely complains of pain or uneasiness while allowed to remain in a state of rest,—at least in a recumbent posture. He is unable to support himself erect for any length of time; and,

---

other situations; but a local form of it, viz. the thickened leg is more common in the island of Barbados, particularly among the natives, than in any other of the Charibean islands in possession of the British. The malady is termed ague and fever by the inhabitants,—and it appears to be so in fact. It is in a manner ephemeral; it recurs at uncertain periods; and, at every recurrence, leaves a deposition in the cellular membrane of one or both legs of a firm consistence—something like brawn; which, by repeated recurrences in a length of years, attains a considerable size, and, as it impairs activity, in the end materially impairs the health. It rarely occurs in Europeans:—It may be considered as the expression of the action of an endemic cause of fever on a particular class of subjects. —I have not had the opportunity of dissecting; but, from external examination, I conclude the substance of the thickened leg to be of the same brawny nature, as that which is noticed in the cellular membrane in forms of general cachexy;—only perhaps still more condensed and solid.

CHAP. III.

any thing like exertion throws him into great agitation. The pulse is always irritated, more or less sharp and quick, hurried to excess by bodily exercise. Thirst is almost always greater than natural, —sometimes it is urgent. The tongue is usually clean, pale and smooth,—without prominent papillæ. The lips are dry and pale, the gums pale and bloodless. The countenance is pale and pasty, —full or bloated,—often inanimate as a block of marble: the skin is smooth, but dry. The white of the eye is sometimes of a lemon yellow; it is oftener clear and pearly, vacant and dull,—without expression or interest. Respiration is free,—not hurried while the patient reclines or remains in a state of rest,—it is disturbed and hurried even to panting when he attempts to walk briskly, or to ascend a height: the pulse then also becomes so frequent—and so indistinct that it is scarcely possible to reckon it. There are here, as in most other diseases, times of greater or less uneasiness,—even distinct paroxysms and remissions; at least distresses and subsidings from distress at given periods; but the subsidings are not marked by evacuation, viz sweat or purging. The appetite for food is sometimes impaired,—in general not materially; but, there is often something unusual in the mode of craving: the desire for drink, as already observed, is often increased—and thirst is sometimes considerable: the bowels perform their office irregularly, sometimes reluctantly: the urine is generally clear—of usual or increased quantity: sleep appa-

rently sound and undisturbed;—there are, for the most part, marks of impaired animal sensibility throughout. In this case, the volume of the body is not diminished by the continuance of the disease; on the contrary, it increases—sometimes gradually, sometimes rapidly: the aspect of the countenance is sometimes puffed or bloated, the flesh soft and doughy; sometimes the countenance is plump and round,—the flesh firmer and harder than human flesh: this may be considered as the true characteristic of the progressive form of cachectic fever. The cellular membrane is filled with a substance firmer than common fat—a substance on which pressure scarcely makes impression; the whole figure is plump and round, the aspect complacent; in so much that, with the exception of paleness and want of animation, the subject of this form of disease would be pronounced, on a superficial view, to be in good health. The appearance is specious; but, it is deceptious. The smallest effort towards exercise produces fatigue, accelerates the pulse to an incredible degree of frequency; and, if carried to any extent, occasions such hurry or agitation in the function of respiration as amounts to panting and total inability. The disease goes on to increase for months, sometimes maintains itself without material increase for years: the patient is valetudinary, incapable of exertion, but not uncomfortable while external things move in an equal train. At a certain point of progress in the accretive form, the functions of important organs become suffocated or

Termination.

CHAP. III.

choaked; effusion of water into cavities ensues—and consequent death; or, a retrograde process supervenes at a given point, and life terminates under a melting diarrhea.

DISSECTION.

A great number of persons who died, between the years 1812 and 1814 inclusive, of the form of the disease just now described or rather of its consequences, were opened and dissected with care, either under my own eye or by my direction, the appearances noted and attached to the history of the case which was transmitted to the inspector's office. The termination, as already observed, was generally by dropsy or diarrhea; but, as the mode of termination was only a contingence of the preceding diseased course, I shall endeavour to separate and note, with as much care as I can, the appearances which had been impressed upon internal structures during the activity of the morbid progression.

Brain.

Nothing was observed within the cavity of the cranium, except a deluge of water in the ventricles and in all the intestines of the brain, where dropsy was the ostensible cause of death.

Cellular Membrane.

In dividing the skin, the cellular membrane in those persons who had died suddenly, and who thus gave an opportunity of seeing the changes effected upon structures by the constitutional action of the disease, presented a very singular appearance. Instead of being filled with fat, the cells were filled with a sub-

stance firmer than fat—and not unctuous. This substance was found in the cellular membrane in every part of the body;—in the omentum and its appendages there were great depositions of it; it was more solid than fat, in some manner pellucid, and not unlike softened cartilage,—resembling in appearance and nature the brawn of pork. The heart was more changed in structure than any other organ of the body. It was often twice, and sometimes three times its natural size; its substance was firm and hard—of a faint brown or pale colour, —and dry in some cases almost to schirrosity; the interstices of the cells were filled with solid pellucid substance, and the base of the heart was particularly loaded with it; lymph was coagulated in some of the vessels—and of a firm consistence; blood,—fluid and black, in others. The coats of the stomach and intestines were thickened; the red fibre absorbed; in so much that the tube, through its whole extent, resembled a strong tube of leather, whitened as if it had been bleached by art:—the red muscular fibre was visible in no part of the body. The liver was usually much increased in size, and often changed in structure by the apposition of new matter. The contents of the gall bladder were usually of a thin consistence, and more or less changed from the ordinary condition of bile. The spleen was sometimes increased in size, but not always.—Such were the appearances where death was sudden; where the disease was protracted,—death apparently effected through a colliquative diarrhea, the coats

Heart.

Stomach, &c.

Liver.

Spleen.

CHAP. III.

and substance of the intestines were often in a melting and separating state; where effected by dropsy, every cavity and every cellular interstice was deluged with water;—the heart was sometimes preternaturally firm in one part—and preternaturally flabby in another.

SECTION IV.

Retrograde or Liquescent Form.

Whether from slighter degrees of one cause, modifications of cause that are not appreciable, or circumstances of subject little obvious to notice, a form of disease which acts on the same series of parts, but which assumes a different tendency in its action from the proceeding, often presents itself in circumstances of locality nearly similar to those described.

Locality.

It presents itself most commonly in the more aggravated degree in low and champaign countries, in marshy and loose soils where water stagnates near the surface; it is more common in the vicinity of fresh water lakes and on the banks of fresh water rivers than in other situations. It is not confined to particular climates and particular latitudes; but its appearance is more frequent, and its course more rapid in hot countries and particularly within the tropics, than in northern and more temperate regions. It is thus frequent near the lakes and rivers of the hotter districts of America, not unfrequent in the islands of the West-Indies, and more frequent at Trinidad than in any of the others at

present possessed by the English and garrisoned by British troops. The atmosphere of Trinidad is in a manner supersaturated with moisture: the position of the quarters or barracks is generally ill chosen for health, and the mode of construction injudicious,—contrived, if one may so speak, to concentre and augment the causes of disease,—not by design, but in ignorance of the causes that act adversely upon health.

Nosological Place.

This cachectic mode of febrile action presents itself under a variety of appearances, some of them so unlike ordinary fever that it will be considered as an outrage to nosology to class them under that head. My own observation sufficiently convinces me that they radically depend on the operation of a febrile cause; and my experience proves to me that the destructive effects of the operation may also be averted by means that arrest the course of fevers. On these grounds, I consider myself warranted to place them as I now do, and to sketch their history in a summary manner, the only one which the limits of this work permit.

Invasion.

The disease begins in some, indeed in most instances, as an intermittent. The intermittent, whether left to itself, or opposed by the ordinary applications of art, ceases or subsides after a course of time. But, though the formal disease ceases, the vigour of health does not return; on the contrary, langour, inaptitude and inability,—a loss of colour similar to what occurs in certain conditions of the female chlorosis, leucophlegmasia and even anasarca make

Progress.

CHAP. III.

their appearance—and advance with more or less rapidity to a fatal termination. In some cases—not even in a few, the intermittent reappears, the swellings decrease, the colour revives,—and health is sometimes restored either by change of season or means of art; sometimes the anasarca recurs, increases and finally destroys life, either in its pure form, or as complicated with diarrhea. The form of disease, here alluded to, is common among the inhabitants of aguish countries. However degenerated in appearance, it cannot be denied a place in the circle of febrile diseases:—with respect to the following some may be disposed to doubt. A person, for instance, is seized,—often after fatigue and sudden exposure to streams of cold air, with listlessness, headache, thirst, indigestion, inability to walk briskly, or to ascend a height without distress and panting for breath: the pulse, frequent and irregular at all times, is irritated and disturbed by exertion to such extent that the series of pulsations can scarcely be traced, or the number counted. Besides the hurried breathing and the extreme agitation in the pulses of the heart and arteries under motion, or the slightest degrees of exertion here alluded to, the countenance becomes pale and wan; it sometimes retains a tinge of delicate pink colour, resembling transient flushings observed occasionally in chlorotic females: it is always inanimate,—often bloated and puffed. The lips and gums are dry and bloodless,—the gums in some degree evanescent. The tongue is pale, generally smooth, or without prominence of

Variety.

papillæ, sometimes it is flaccid and diminished in size; it is seldom foul; or, if foul, it is clay coloured. The eye is clear,—the white pearly,—the expression vacant or without character. The skin is generally dry, and while dry, of a satin smoothness and polish,—without elasticity or buoyancy when pressed by the hand: the heat of the surface is seldom high; where higher than natural, it gives a disagreeable impression to the hand, different from the impression of genial warmth or simply augmented heat. Thirst is usually increased,—seldom greatly increased; but it is not easily satiated. There is little desire for food,—sometimes there is an aversion. The body is ordinarily open, sometimes there is purging: the urinary discharge is irregular,—scanty or profuse: sleep is disturbed and unrefreshing: delirium, or mental derangement is rare.—The disease, as now described, sometimes terminates fatally in a fortnight; it oftener continues for months, even sometimes for years. Where the course is protracted, anasarca or diarrhea are ordinarily the ostensible causes of death.—Inaptitude to motion, agitation and palpitation of the heart, an inexpressible agony of feeling, panting for breath under the slightest degree of exertion, a sudden and unaccountable subtraction of colour and loss of elasticity are the chief characteristics.—The attack of this form of malady is sometimes sudden and the course rapid; sometimes the approach is gradual and slow,—the manner insidious,—the event fatal after a long distance of time and a variety of

Termination.

CHAP. III.

changes in the form; which, however varied, mark consuming constitutional cachexy, depending on modified operations of the endemic febrile cause in particular constitutions of subject. In this manner, it seems often to constitute the seasoning disease of Africans transported to the islands in the West-Indies, whether destined to carry the fire-lock, or to labour with the hoe.

DISSECTION.

The appearances, observed on the dissection of those who die of the liquescent form of febrile action here described, differ among themselves, in so far as the course of the disease is rapid or slow. In the first or rapid form, the substance of the brain is soft and flaccid, diminished, and if one might so speak, melted down: the heart is pale in colour, flabby in substance,—inelastic as a bag of wool or cotton, generally diminished in size,—the red muscular fibre entirely absorbed. The stomach and intestines are pale in colour—white as if they had been artificially bleached,—they are sometimes distended with flatus. The liver and spleen are usually diminished in size, soft and flabby: the superficial veins are without red blood;—blood, black and uncoagulated is generally present in the larger vessels near the heart.—In the second or slow form, in which, as already observed, anasarca and diarrhea are ostensible causes of death, the ventricles of the brain and all its cavities and interstices are deluged with watery fluid;

the cellular membrane under the skin throughout the whole extent of the body, the cavities of the thorax, pericardium and abdomen are likewise full of it: the heart is reduced to a small size,—pale and flabby,—the red fibre completely absorbed. The liver and spleen are small and collapsed,—pale and flaccid: the stomach and intestines are white, as if they had been long under a process of bleaching: no red muscular fibre is discernible any where; and the quantity of red blood is apparently diminished throughout the body.

CASE I.

Grainger, a man of the West-India Rangers, lately from Martinique, and in bad health for some time past, was admitted into hospital on his arrival at Barbados. The lips were pale, the countenance void of colour, the habit plump and full, breathing hurried almost to panting under exercise,—the case such as is usually called cachexy. He lingered for some time and died. *The body was opened.*—The lungs were in themselves sound; but a small quantity of water was effused into the cavity of the thorax. The pericardium was distended with water and the heart was at least three times its natural size: the structure was somewhat changed—firmer than natural, but not preternaturally hard and dry: there were no ossifications nor suppurations; fatty, or rather pellucid substance, like brawn, was accumulated in great quantity. The blood was black—without cohesion. The liver was sound externally: the gall bladder was white as if bleached, and the *pori bilarii* were distinguished in their dispersion through the liver by the same bleached-like appearance. The stomach was thin and pale,—without a visible blood vessel; the intestinal canal was in a similar state—pale and bleached;—the peculiar kind of fat or brawn characteristic of this form of disease was every where abundant.

CHAP. III.

CASE II.

M. a soldier of the York Rangers, one of the most active and able men of the corps, became indisposed about eight months since while in the island of St. Vincent. From being florid and in high health, he lost his colour and lost the power of exertion, particularly of ascending a height: he had a cough, but no expectoration. He was brought to Barbados; and he has been in hospital ever since he arrived, now about five months. None of the means employed for his relief were of any permanent benefit. He died and was *opened*.—The heart was large in size—firm, even hard in substance,—evidently of changed structure: the pericardium was distended with water to a great extent: the lungs adhered every where to the pleura costalis,—almost inseparably on the back parts; the substance of the lungs was changed,—gritty, knotty, impermeable to air in several places: the whole of the parts within the cavity of the thorax were changed in structure by something like a constitutional process: the spleen was large; the liver rough on the outside, as if carbuncled; the stomach white, as if bleached;—the intestines were similar.—There was here a cachectic organization: the heart and lungs were the parts most affected:—the history is not correctly noted.

CASE III.

Halket, of the Sappers and Miners, in ill health for some time,—the commencement of the indisposition not distinctly observed. He lost strength; the skin became smooth and like satin; the lips and gums pale; the tongue pale and diminished in size; the eye pearly white; no power of exertion; appetite indifferent; thirst considerable; attacks of febrile paroxysms occasionally; sometimes fits of purging. He sunk gradually, died and was *opened*.—The muscular flesh generally pale: the heart diseased; the substance brown—not red—hard in one part, flabby and pale in another: the stomach and intestines white and bleached; depositions of fatty dense substance like

jelly throughout the mesentery; numerous hard bodies interspersed like swelled glands.

CASE IV.

Cox, attacked with fever on the 26th September,—the case slight and of no more than three days duration. The appetite returned; he made no complaint and desired to return to duty; but his skin appearing smooth and polished as a wax doll, with a peculiar delicacy of colour—white with mixture of pink, he was detained among the convalescents with a view to ascertain the cause of such singular appearance.—In a few days, he began to complain of thirst; his lips and tongue became pale and dry,—the whole aspect such as if there were a want of red blood. He retained appetite for some time, walked about the hospital inclosure—losing strength daily. He died on the 13th of October and was *opened*.—The pericardium contained much water: the substance of the heart was flaccid and bloodless: the muscles every where flaccid and pale;—the blood in a manner changed to water.

CASE V.

January 8th, 1814.—Mahor, of the Royal Sappers and Miners, ill for some months of the form of disease termed cachexia. He lost colour and became short winded without cough or spitting; the lips were pale and bloodless; the tongue pale. He slept well and had ordinary appetite for food; and, when allowed to remain at rest, he complained of no pain or uneasiness: had no wind when he attempted to walk, at least to accelerate his pace or ascend a height. The body was plump and round, firm and dense when handled. He took the aluminous water of the Isle of Wight apparently with some advantage. He went to his barrack, and returned again to the hospital in a few days in a worse condition than when he went out, having considerable fever, great thirst, vomiting of every thing he took,—and latterly purging. He died and was *opened*.—The structure of the right lung was changed into something like amadou or touchwood, nearly if

CHAP. III.

not altogether impermeable to air—no ulceration or purulency. The heart was of a solid and firm texture, but pale and dry, in some degree scirrhous: the stomach white as if bleached,—its coats thickened: the intestinal canal similar,—like a thickened leather tube: the cellular membrane throughout filled with a substance like brawn of pork: the liver of an enlarged size,—also the spleen: the pancreas diseased—thick, firm and hard.

SECTION V.

Febrile Action in the Serous Temperament.

The fevers which occur in the sanguine and phlegmatic temperaments exhibit different modes of action—progressive or retrograde, viz. suppurative or adhesive, gangrenous or liquescent. The serous constitution, which manifests itself as predominating at particular times and under particular circumstances of subject, has in like manner analogous forms of action with the sanguine and phlegmatic; but they are complicated and not easily traced. The effects of morbid action, proceeding under the dominance of what is here termed sanguine or phlegmatic, are manifested, for the most part, on the organic constitution of the system generally or locally, and vestiges of their action are for the most part visible to the eye of the anatomist after death. The effect of morbid action, in the serous temperament, is manifested on the serous system of vessels, which are organs of excretion, sometimes of excretions so subtile as to be invisible. It leaves comparatively small vestiges on constitu-

tional organic structure capable of being traced in dissection of the dead body. The morbid action obtains radically in the serous portion of the blood. The serum is susceptible of many changes. It is the seat of acrimonies; consequently it is the receptacle of infections and contagions—visible or invisible; and, as the morbid action which obtains in it is general throughout the whole extent of the excretive system, the effect is general and the consequences are important.

When the serous temperament obtains generally in the system, whether as a consequence of times and seasons or of something still more contingent, the application of a febrile cause excites a febrile irritation in the whole system of vessels of serous secretion, changes the existing balances of health and involves the life of the individual in great danger. These forms of action are greatly diversified; but the concentrated form only, as it presents itself in tropical climates, is brought under view in this place.—

Invasion.

The attack is sometimes sudden and violent, sometimes gradual and of inferior intensity. The coldness and shivering, so common at the commencement of febrile diseases, is here variable, sometimes protracted, sometimes short,—passing rapidly and almost without notice. The head-ache is often severe—sharp and lancinating throughout the whole of the head; sometimes more particularly severe at the forehead and temples. The pulse is usually frequent —for the most part quick, sharp and irritated,—scarcely ever free and expansile. The skin is gene-

CHAP. III.

rally hot; the heat sharp, pungent, acrid and biting, peculiarly disagreeable and scorching. The surface of the body is ordinarily dry, harsh and unpleasant to the touch; it is thick—condensed and compacted in some cases as if it were thickened by the addition of something adventitious; in others it is thin and irritable, but still dry,—and, in many instances, dry and marcid like a blighted vegetable leaf, particularly in relapse. If the skin be thick, it is deficient in sensibility, scarcely vesicated by the application of the strongest blisters; and it slowly regains softness and unctuosity after the actual disease has ceased, having a compaction and solidity on some occasions as if the albuminous part of the blood were actually coagulated in the extreme cutaneous vessels. In this state of compaction, the hottest of baths or the strongest stimulating liniments, aided by the most careful frictions, are not sufficient to excite even a temporary moisture, the surface remaining constricted and impervious as leather throughout,—frequently, for some time before death, having a green appearance like that of rancid tallow. The bowels, together with this constricted state of the skin, are generally torpid,—insensible to the stimulation of the strongest purgatives; sometimes irritable,—moved irregularly or by starts,—the evacuations watery or vitiated;—the urinary discharge is diminished or suppressed:—the whole series of serous secretion subverted and changed, particularly the cutaneous secretion. Life ceases sometimes under marks of cutaneous constriction; sometimes it emer-

Progress.

Termination.

ges under marks of relaxation,—general or partial, sudden or gradual; sometimes the constrictions are removed—and life ceases gradually under a process of colliquation.

DISSECTION.

The principal of the appearances, which present themselves on the dissection of those who die of this form of disease in the constrictive, or what may be termed the progressive stage, consist in the unusual dryness of all the interior cavities, in a total want of moisture and unctuosity, an unusual thickness and compactness of the skin; and frequently, where there would appear to have been particular modes of action on the serous vessels of interior cavities which produce more or less of effusion, in the conversion of the albuminous part of the fluids into cheesy substance like pancake or curd:—these appearances are often observed on the heart or brain: the gall bladder is often filled with a liquor black as soot.

SECTION VI.

Retrograde—Colliquative or Liquescent.

Instead of constriction in the serous system of vessels, and consequent changed and diminished secretion of serous fluid under the operation of a febrile cause, there is sometimes relaxation of peculiar modification, viz. an excess of secretion, particularly of the cutaneous secretion, colliquation and melting of the

CHAP. III.

whole body. Such mode of febrile action is sometimes epidemic,—and it is then very fatal. It has not occurred to myself as an epidemic; nor has it often fallen under my notice in any form; but it has occurred often enough to convince me that such form of febrile action actually exists, and that it is not rare in the relapses of infectious fever.

CASE I.

Gibbs, a seasoned soldier, but weakly man, fatigued by watching and attending his sick master, came to the hospital on the evening of the 10th of April, 1812, complaining of head-ache, and appearing to be greatly distressed. His pulse was febrile;—skin hot and dry: he was bled, but not much relieved: the orifice opened of itself in about an hour after the arm was bound up, and a considerable quantity of blood was lost before the bleeding was stopped: he did not faint in consequence; but his pains and distresses were not materially relieved. One blister was applied to the head, another to the stomach:—a purging bolus was given immediately and repeated at a short interval,—with frequent doses of Aq. Ammon. Acet.: the bolus did not operate well;—he expressed no relief:—the skin dry and flaccid:—the aspect withered:—no sleep:—much distress with feelings of weakness:—pulse regular—not small, but without energy or expansion: the pain in the head less severe: thirst great; lips dry;—tongue not foul. April 12th,—no appearance of amendment; the skin flaccid and without moisture,—dingy and dry,—not yellow; heat not more than natural,—thirst considerable,—pulse without energy,—no sleep: complains of distress internally—about the præcordia,—creeps together as if he was cold. April 13th,—vomited in the night in considerable quantity: in the morning, the pulse seemed to retire from the surface; it was regular,—not frequent, but not easily felt: he labours much in breathing and complains much of uneasiness and distress at the præcordia: he was washed with salt

and vinegar,—and he appeared to be revived for a short time, but soon returned to his former state: he appeared flaccid and withered—and without power: the pulse gradually sunk,—and he died about six in the evening. *Dissection of the body.*—A considerable quantity of water under the membranes of the brain, and a great deal in the ventricles; the substance of the brain itself flaccid—as if macerated; the interior of the stomach red in some places,—its cavity filled with a liquor black as ink;—there was also some black matter in the gall bladder.

CASE II.

December 21st.—Trouskie, attacked this afternoon with symptoms of fever, viz. chilliness, head-ache, pain of the back, succeeded by heat and great irritability. December 22nd,—the pulse frequent, tense and rather full; the heat considerable—acrid and pungent; the head-ache severe; thirst troublesome, but not intense; constriction of the skin,—dinginess like withering. Bled to 24 ounces; relieved; the blood flowed slowly at first,—more freely at last. December 23rd,—slept the whole night; head-ache removed; thirst considerable; tongue clean; skin cool; pulse of less frequency—free and expansile: purge. Evening,—body opened,—nose bled freely; skin soft and moist. December 24th,—eight or ten evacuations by stool; the pulse strong—full and expanded; little sleep; skin and countenance rather yellow. Evening,—the lips rather dry; the pulse less full and expanded. December 25th,—slept well during the night. December 29th,—recovered gradually, and was discharged on the 3rd of January.

SECTION VII.

Sentient and Intellectual Peculiarities modifying the Operation of a Febrile Cause.

Besides the above described modes of febrile action which, consisting in actions perverted organi-

CHAP. III.

cally, leave obvious marks of organic derangement on the dead body,—the action consequent to the application of a febrile cause manifests, on many occasions, forms of movement in the sentient and intellectual systems,—various and important in their indications, but transient and incalculable in their effects,—no traces of their action being visible on the body after death, even to the eye of the most discerning anatomist. The medulla oblongata and spinal marrow appear, from the best considerations that have been given to the subject, to be the radical seat of that form of life or irritability which is diffused to every part of the organic system, which manifests different force and possesses a different tone of intensity in different parts, according to constitutional but inexplicable aptitudes, and which is not perhaps of the same force precisely in any two individuals of the same species on the face of the earth. It is through this instrument of sense, in its various expansions, that man is connected with the physical system of nature. The irritability, or, as it may be termed excitability of this organ, in consequence of causes acting in the great chain of the operation of nature, has risings and fallings at diurnal, or other periods, which influence and diversify the phenomena of the febrile operation in a conspicuous manner. We cannot penetrate the cause; but we observe the fact that animal irritability, in analogy with electric influence, is sometimes superabundant, sometimes deficient, sometimes fixed or stationary,—in common

Animal Irritability.

language torpid; sometimes fluctuating, unstable or ticklishly balanced. In some of the more aggravated and concentrated forms of febrile action, the fund of irritability, though abounding in the system even to excess, is prevented from manifesting the suitable expression by artificial causes of constriction or compression. The fact of existing oppression is obvious, ascertained by experience, in so far that customary stimulations do not, under its agency, produce the customary effect:—the mode is unknown by which the effect is restrained. In other cases, the condition of the irritable power is fluctuating and unsteady; the evidence of the existing condition sometimes expressed by stronger, sometimes by weaker commotions, viz. violent explosions, spasms, starting—even convulsion;—or feeble explosions—tremors, fainting, inability to move, or to support motion,—partial, or more general paralysis. It cannot be said, in the case here under view, that the total quantity of the irritable power is diminished; it is evident that it is not justly balanced; but the cause which produces the perversion of balance is obscure.—Besides the two conditions now alluded to, there are others in which the quantity would appear to be actually deficient, or so deeply latent that it cannot be excited except by the strongest powers of stimulation. The animal movements are then slow and depressed: the faculties are torpid; but the mode of action is not perverted so as to assume a new character.

CHAP. III.

As animal irritability is the subject on which all physical causes act, the proper balance and adjustment of irritability becomes an important and primary consideration with the practical physician; and further, as appearances are influenced and modified by its quantity and condition, it is necessary, with a view to preserve the order and consistency of morbid history, that the action which is strictly speaking organic, and which leaves a permanent organic effect on the ostensible parts of the system, be separated from appearances which strictly belong to the sentient system, which are fluctuating and changeable,—and which leave no perceivable traces behind them in the dead body. If this be not done, it is not possible to establish consistence and order in the historical description of febrile action, for animal irritability belongs to fevers of all constitutions. As animal irritability is the base from which movements originate and by which they are regulated, the regularity, order and force of the movement depend upon the condition of the irritable power,—a condition influenced by its own law, and varying in individuals generally or organically in a manner we cannot explain.

Intellectual Sensibility.

Besides the condition of animal irritability, which so materially influences appearances under the action of a febrile cause, the state of the intellectual sensibility, the just consideration of the movements of which is of much importance to a right comprehension of the febrile process, deserves notice in this place. Intellectual sensibility is the

instrument which raises us above this scene of things, which conducts us to the Deity, and which, receiving an impression of the divine will of paramount force, influences action and maintains moral conduct in order and consistence, in spite of solicitations to transgression from the multiplied appetites of animal sense. It is obscured and perverted by the operations of a febrile cause in various forms and degrees. The organ, on which this function depends, has its seat within the brain; but we do not know at what particular point it resides; nor can we justly ascertain the circumstances in the organic condition which disturb the order of its movements. The membranes of the brain are often deeply inflamed; the substance of the brain itself is even sometimes inflamed to considerable extent; at least, it is so presumed from effusions of coagulated lymph, adhesions between membranes, formation of new parts, viz. bone, cheese-like substance, even purulent matter on the surface and in the very centre, effusions of fluid into the ventricles,—and such other marks of derangement in structure, as furnish evident proof that the ordinary channels of circulation could not be otherwise than changed or obstructed, though the intellectual function was not materially disordered, or only disordered as a consequence of mechanical weight and compression. In other cases, the intellectual function is greatly disordered without marks of local inflammation, or other form of local derangement that the eye of the most clear sighted anatomist can discern in dis-

CHAP. III.

secting the dead body; yet the mental derangement, then sometimes so engrosses, or absorbs the febrile action from the commencement,—or from a certain period, that nothing else is noticed. It is of different duration; sometimes it ceases suddenly; sometimes it declines by slow degrees. Sleeping and watching and the numerous forms of intellectual perception depend on relative conditions of the brain. Mental derangements are of various shades and degrees, as connected with the operation of a febrile cause. They are sometimes primary and general; sometimes secondary and in a manner partial. They are always to be considered in forming an estimate of the result of the febrile process; but the primary and general act of alienation is to be carefully distinguished from those forms which obviously arise from local pressures, whether of an inflammatory or other nature.

CASE I.

A man of the 90th Regiment was seized on the 13th of November, 1813, with symptoms of fever, giddiness and confusion in the head, accompanied with considerable difficulty in breathing. He was bled largely,—purged with jalap and calomel and blistered on the head and neck. The blisters did not rise well; but he was so much relieved as to be considered convalescent, when he was attacked suddenly in the morning of the 17th of November with horrors, tremors, startings, delirium and great agitation: the pulse was frequent, hurried, irregular; the eye clear; the tongue clean. November 18th,—delirious all night;—tremors, startings and agitations still continue; uneasiness about the navel;—desire for the night chair,—

no evacuation;—*borborygmi*; pulse frequent,—regular, but not full; heat moderate; skin soft,—not animated; giddiness in the head without pain; eye not clear or cheerful,—pupil rather contracted; countenance not natural. He is sensible of his wanderings, but cannot restrain himself from wandering;—he handles the bed clothes and forms them into figures as if to play with them: the tongue is moist,—the bowels opened by a purgative. November 19th,—troublesome during the night; no sleep; the pulse more frequent; the tremor diminished; the mental delusion strong,—insists on his being allowed to go to barracks that his head may be well before he embark for America. November 20th,—troublesome at night, now more composed and reasonable; complains of shooting pains about the forehead and occasional dimness of sight; the pulse more frequent than natural; the skin cool,—not cold; the eye clear,—the pupil rather contracted; tongue clean;—relishes food. November 21st,—better. 22nd,—convalescent.

CASE II.

Stewart, hospital-mate, arrived at Barbados in the early part of February in good health, but strongly prepossessed against the climate of the West-Indies. He was present, some days after his arrival, at the dissection of the body of a person who had died of the disease termed yellow fever, and he seemed to be disagreeably impressed at the appearance of what presented on the occasion. He complained in the course of the day of head-ache and other common symptoms of fever. He was bled largely and evacuated by purgatives. The fever went off; but he continued indisposed with flutterings and palpitations at heart—and something like night-mare during sleep: his mouth was clammy; his taste mawkish—and his appetite not good. By the end of three weeks, he recovered his spirits. He resumed his duty in the hospital, and discharged it with alacrity for eight days; when, appearing to be in a serviceable state of health, he embarked for the island of St. Christopher, being destined to serve with the 25th regiment

CHAP. III.

which composed the garrison on Brimstone-hill. Mr. Stewart was prejudiced against the climate. He imagined that he smelled something sickly and uncommon in the air upon the hill; and, having occasional flutterings and agitations when he moved about, he did little of the ordinary duty; but, being present one day (Wednesday) at opening the body of a person who had died of the fever which then prevailed in the garrison, he was struck so as to be confounded and incapable of doing any thing. He sauntered about the barrack the whole of the day, refused to go to dinner, and, being very unwell in the night, he bled himself to a large extent. In the morning early, when I first saw him, his bodily uneasiness was in a great measure removed; but he was impressed with the idea that he could not live; and, under the idea of dying, he proceeded to arrange his affairs. This he did with great correctness, manifesting an illumination of mind, in making his dispositions, apparently superior to the ordinary tenor of his character. The pulse was free, but extremely frequent: the head-ache was scarcely perceived,—and there were no sensations of pain except in the epigastric region, where he felt an uneasiness that he could not describe distinctly: the tongue was clean; the eye clear; the skin moderately hot, but dry. He was not weak; that is, he rose up and lay down without help, walked about the room as a man in health. A blister was applied to the head: calomel, camphire and opium were given internally and repeated at intervals. The impression that he must inevitably die, so strong in his mind in the morning, wore off in the course of the day; and the danger, when he himself lost sight of it, became evident to those who attended him. The skin remained obstinately dry, the pulse of an extraordinary frequency. He now complained of slight uneasiness in the head and of a clammy, mawkish taste in the mouth: the tongue was rather rough; it was not foul, but it did not look like the tongue of a person in health; thirst was inconsiderable, —and he was not altogether without appetite; at least he took different kinds of nourishment without seeming disgust. Friday,—the pulse of an extraordinary frequency—and not altoge-

ther distinct; the skin dry,—rather dingy or withered. Saturday,—pulse not perceivable; vomits sometimes,—the colour of the vomited matters somewhat dark; complains of a sweet, unpleasant taste in the mouth. Died in the evening.—*The body was not opened.*

CASE III.

May 6th.—B——, 96th Regiment, attacked with fever of remittent form:—the symptoms, moderate in force, subsided in twelve or fourteen hours. May 7th,—no fever in the morning. Evening,—fever returned,—not violent. May 8th,—no fever. 9th,—no fever. 10th,—seized with delirium—lively and sometimes outrageous; the tongue clean; no increase of thirst,—no increase of heat; takes food as if he were not sick; bowels torpid; no sleep; perfectly insane. May 11th,—continues the same; no sleep; the appearance more that of insanity than febrile delirium. May 12th,—no material difference; takes food; tongue clean; pulse not disordered. May 13th,—slept in the night—better: the insanity perfectly removed. Recovered.

CASE IV.

January 20th.—N——n, R. Artillery, attacked with symptoms of fever preceded by chilliness, and accompanied with severe head-ache and distressing vomiting, or desire to vomit. Bled largely, viz. from three to four pounds,—relieved; the pulse nearly natural. January 21st,—no complaint. 22nd,—no complaint. Evening,—seized in the afternoon with a wild, extravagant delirium—without any previous complaint of pain or uneasiness, and without any of the ordinary symptoms of fever accompanying it. He imagines he is to be hanged in three days. January 23rd,—the mental aberration still continues; no thirst; no increase of heat; the tongue moist and clean. January 24th,—slept during the night; complains much of weakness; pulse regular,—not frequent; heat natural; skin soft; copious evacuation by stool; tongue rather foul,—not dry; eye and countenance calm; no mental aberration. Eve-

CHAP. III.

ning,—the mental aberration returned about noon. His fate he says is decided; he is to be hanged in an hour for stealing coals; but he is innocent,—resigned and returns thanks for yesterday's respite: the eye and countenance are cheerful rather than melancholy; tongue cleaner than in the morning; no commotion in the pulse. January 25th,—pulse regular and calm; tongue rather foul; mind still occupied with something not present; uneasiness in his bowels. Noon,—passed some blood by stool; bowels easier; ideas clear; pulse more frequent than natural. January 26th,—better by his own account; the mind not sound,—the mode of derangement particular; tongue clean, or only a little foul in the middle; no appetite,—says he is thirsty;—he does not drink; the lips are dry; no external heat; pulse natural,—perhaps deficient in energy and force,—regular in time and manner. January 27th,—has slept and says that he is better; but, there is something *distrait* in the voice and manner; the pulse is good; the heat natural; the tongue moist, but somewhat foul; evacuation by stool; skin rather damp. January 28th,—has slept, according to his own account,—not according to the account of the attendants; pulse more open and expanded,—rather more frequent than natural; heat natural; skin soft; tongue whitish, but moist; says he is thirsty, but he drinks little; copious evacuations by stool from a purgative; ideas not clear,—complains of a sense of lightness in his head. Evening,—countenance more animated,—*distrait* and incoherent at times; has taken some nourishment with seeming relish; pulse more expanded. January 29th,—has talked incoherently during the night,—melancholy and *distrait*; the pulse nearly natural,—rather more frequent,—not hard,—not energetic; the skin flaccid,—not animated.—Evening,—has frequent desire for the night chair without effect; complains of weakness and certain feelings of lightness or giddiness in the head.—No nourishment; pulse more frequent than natural; skin damp,—not warm; countenance not cheerful. January 30th,—restless in the night,—now asleep, or appearing to sleep,—languid; eye and countenance without animation,—like the countenance of a corpse except in

colour; complains of weakness, of giddiness of the head; griping—with a desire for the night chair; occasional nausea; the skin flaccid and damp; he says he is ill, but does not know how. January 31st,—has been quiet all night; the eye and countenance composed and calm—almost like a statue; the pulse more frequent than natural,—not elastic. Evening,—the eye and countenance more animated; the voice very low; the mouth sore—with something of bad taste; has had stools; desires an egg. February 1st,—eye and countenance more animated; the skin warm and soft; pulse energetic; has slept and acknowledges himself to be better. Evening,—improves. February 2nd,—sleeps quietly,—better. Evening,—less satisfactory; pulse frequent,—not strong; clammy perspiration; has taken food greedily. February 3rd,—perfectly sensible; the parotid and sublingual glands swelled,—the effect of mercury. February 4th,—improves; eye and countenance clear; glands swelled and gums red; no increase of saliva. February 5th,—improves; saliva about the mouth. February 6th,—improves. Recovered.

Conclusion.

I have endeavoured, in the preceding pages, to discriminate and to describe in as clear and concise a manner as I am capable of describing, the different forms and degrees of endemic fever; in so far as the febrile act is manifested on the different constitutions of habit that exist previously to the application of the morbid cause, or as it is manifested generally on all the functions of the system. I am aware that the discriminations alluded to will be considered by many as a child of imagination,—a reverie of exploded doctrine,—and I am sensible that they are not easily apprehended. They cannot be traced and appreciated without minute attention to all the conditions that are connected with animal life, whe-

CHAP. III.

ther in health or in disease; but, obscure as they may be, I am convinced that they do exist; and I have proof in my own experience that attention to them, in all their forms and combinations, is most important for the right directing of the practical act of the physician. The outline of the descriptions here given is correct; in as much as it is an analysis of cases taken down at the bed side of the sick. But, while the outline feature is correct and adheres to its constitution throughout, the constitution, and consequently the feature of the disease, is liable to be, and actually is changed by contingence,—accident or medical treatment. One constitution changes into another; that is, the action is transferred from one series of parts to another—generally or partially; it even assumes a different character within the circle of the total duration, viz. from progressive to retrograde, or *vice versa*. In this manner, the sanguine and phlegmatic interchange, or exist to a certain extent in the same subject at the same time. Hence, there are frequently observed, in the dead body, traces of both adhesive and suppurative inflammation; there are also observed under favourable termination, operations that are partly expulsive and critical, partly adhesive and congestive, exhibiting appearances of visceral obstruction of more or less extent. Besides the complications or interchanges here stated, the sanguine constitution changes into the gangrenous direct; the phlegmatic accretive into the phlegmatic solutive or liquescent as its corresponding retrograde; the compound gangre-

CHAP. III.

ous, into the sloughing gangrene. The febrile forms, which occur under constitutions that are radically retrograde and solutive, sometimes assume the progressive, active and creative process which tends to favourable crisis. It also happens—and not infrequently, that tumults and disorders in the functions of the organic system are suspended, at least temporarily,—the disorder suddenly re-appearing under a transfer of the action to the sentient system —animal or intellectual. The sentient system may be considered as the basis on which all the transfers from one form of action to another move; and its condition is changed imperceptibly by circumstances that are not explicable in our present state of knowledge.

CHAPTER IV.

Signs of Prognostic, or Estimate of Danger and Safety.

CHAP. IV.

Prognostic Part of History.

TO the description of general fever given in the preceding chapter, it is necessary to add an estimate of the import of the symptoms, or parts of the diseased action which bear directly on the danger or safety of the patient's life, and which are to be considered as supplementary of the history of the disease. The symptoms, which are various, are variously combined: when the whole is known and estimated separately and collectively, the opinion formed respecting the event may be supposed to rest on something like a basis of science.

Certain diurnal risings and fallings in the intensity of symptoms are observed in almost all diseases of a febrile form; in many, the accession of distinct paroxysm and remission, or intermission adheres to stated periods with great regularity. Of periodic

forms, the quotidian or double tertian, the single tertian and the quartan are the principal. The single tertian is the more common form in temperate climates, even in hot climates in the cooler seasons of the year: the double tertian—and forms of still greater complication prevail in tropical latitudes, and in unhealthy districts of temperate latitudes in summer and autumn.—The form of the type, in conjunction with other signs, furnishes ground for prognostic, and the points, chiefly to be regarded in the estimate, bear on the greater or less regularity in the times of accession, the longer or shorter duration of the paroxysm, the mode of termination of the paroxysm, and the character of the remission or intermission—as perfect or obscure.

Type.

The single tertian is the most simple,—and it is generally held to be the least dangerous of the types. The observation is not unfounded; but it does hold universally. The single tertian may be considered as the base of the others. Exclusive of complication, it is more than any other liable to accidents during its course, viz. convulsion or other untoward symptom which, coming suddenly, precipitates into sudden death. The quartan is tedious. It is less liable in its ordinary course to sudden accident than the single tertian; but it more certainly lays the foundation of organic derangements which render the subject valetudinary during life. The type,—tertian or quartan, which adheres to its stated hour of recurrence is comparatively safe. If it anticipate by one or two hours

Anticipation.

CHAP. IV.

only, nothing of importance is implied; if by ten or twelve, there is cause to apprehend danger: anticipation to such extent sometimes ushers in a fatal paroxysm, it in most cases indicates a change in the mode of action of the febrile cause—and frequently an unfavourable one. Long anticipations are always suspicious; hence the characteristic is to be carefully observed that the mode may be distinguished from duplication of the single type,—which is less dangerous. The single tertian often anticipates progressively by short anticipations to a given point; from that point, it again postpones in a corresponding ratio until it finally cease. A change in the hour of accession indicates, for the most part, a change in the circumstances of the disease; the postponing change indicates diminished violence and tendency to crisis:—the rule is general—not absolute.

Postponings.

Duration of Paroxysms.

The duration of the paroxysms of the true single tertian does not exceed twelve hours; if it exceed eighteen, there is cause to expect something untoward. The paroxysms of the double tertian are, for the most part, unequal in duration and unlike in force—the one beyond twelve hours, the other under ten. The longest paroxysm is usually the most violent—but not uniformly so. It not unfrequently contracts the limit of its duration, postpones the hour of attack, and decreases in violence as the disease proceeds; the short one extends its duration, anticipates the time of recurrence, and, at the same time, increases in force;—in such case, the paroxysm,

which was the slightest and of the shortest duration at the commencement, now being the longest and the most violent, becomes critical of the whole disease. The above are the principal and most important; but forms are sometimes more complicated than simple duplication. A triplicate or semitertian, for instance, occurs not unfrequently,—the paroxysms so mixed that there appears, at first view, to be only one long paroxysm of thirty-six hours duration. Such complicated form indicates danger, —chiefly from the mixture of the paroxysms leaving short or scarcely perceptible intermissions for the exhibition of bark, the remedy considered as the preventative of recurrence:—the degree of the danger is not easily defined.

When all the parts or stages of the paroxysm follow one another in the ordinary course of succession, the solution taking place in a given time by a copious, warm and fluid perspiration, the prognostic of the event is favourable. On the contrary, if the paroxysm subside without sweat or other copious evacuation, viz. purging, bilious vomiting, &c. the case is suspicious, either as liable to sudden accident, or, as laying the foundation of congestion in an internal organ which prognosticates imperfect recovery;—valetudinary existence and final termination in constitutional cachexy.

Termination.

Perfect intermission gives expectation of a favourable issue,—not always of a speedy one. Imperfect intermission gives cause to apprehend danger, but indicates a less protracted disease:—it is

Intermission.

CHAP. IV.

not easy to estimate with accuracy the relative degrees of danger.

In proceeding to estimate the value of the signs of prognostic that bear on the danger or safety of life, it will be proper primarily to notice the indications that arise from the character of movement observed in the instruments of the great circulation, which may be considered as the key of all organic actions. If the pulses of the heart and arteries be quick and energetic, free and expansive; and, if they do not exceed one hundred strokes in the minute, the disease may be considered as one of a mild and open character,—furnishing ground for prognosticating a favourable termination. On the contrary, if the pulses be less frequent, or little more frequent than natural,—regular and uniform, but tardy and sluggish in mode of contraction, defectively expanded in the time of dilatation, though such as ordinary observation scarcely distinguishes from the pulse of health, the prognostic of the event is not favourable, —the condition is deceptive,—the commencement torpor,—the termination stagnation.

Pulses.

Mode.

Number.

The number of the pulses of the heart and arteries in a given time varies in different subjects by natural constitution, and it varies extremely under disease. If the number of pulses does not exceed sixty in a minute in ordinary health, eighty may be regarded as febrile; if the number of the pulse be seventy in health, ninety is decidedly diseased. If it amount to one hundred in a minute, it deserves to be called frequent; if to one hundred and thirty, very fre-

quent. If it exceed one hundred and forty, my own perceptions are not sufficiently acute to follow it, so as to reckon it with accuracy.—The mere frequency of pulse is not abstractedly in itself a thing of great importance at the commencement of fever. Tumult, agitation and irregularity in the mode, viz. creeping, starting, intermitting, suppressed and obscure call for attention: they indicate something peculiar—and they prepare us to look for accidents. The hard and contracted pulse, or the irritated and oppressed pulse, which struggles as it were to overcome resistance, is especially deserving of notice: it often precedes capillary paralysis.

The conditions of pulse now alluded to present themselves at the commencement of fever; they continue throughout, or they change into other modes at different periods, furnishing different indications according to the nature of the change. If the pulse, from frequent, irregular, contracted and hard, become comparatively slow, regular, expanded and soft, there are grounds to prognosticate a favourable termination. The rule is general, but not absolute; for it sometimes happens, more especially in the concentrated forms of the sanguine constitution, that the pulse becomes open, free and expanded, even to appearance strong, giving the idea that a critical perspiration is in the act of breaking out. The expected perspiration does not appear; and, after the lapse of one or two days, the pulse begins to lose its force and apparent expansion. It slowly and gradually recedes from the surface

Late Periods.

CHAP. IV.

and extremities:—venous paralysis commences and advances, accompanied, for the most part, by hemorrhage and oozings of blood from different parts of the body—generally considered as harbingers of death. I have myself been deceived by this condition of the pulse on more occasions than one; I therefore note it that others may be aware of the ambiguity of the sign. The surest criterion of the fallacy consists in defective energy and quickness in the mode of the arterial pulsation,—especially as accompanied by a hide-like thickness and torpor of the skin. In the more concentrated forms of the sanguine constitution, the pulse which, during the early period of the disease, was tumultuous, irregular and frequent, or hard and contracted, sluggish and obscure, often becomes slow, soft, full and regular so as to be distinguished with difficulty, even by the experienced, from the pulse of a person in health. This change which, if accompanied with a hide-like thickness of the skin, indicates a decided tendency to a fatal termination, takes place most frequently about the third day. As the change in the pulse here alluded to, is the first unambiguous sign of decided fatal tendency in the concentrated form of disease; so febrile frequency, quickness and energy in the mode continue the longest to support the hopes of a favourable issue. The frequent, irregular and tumultuous pulse is not ordinarily of much import at the early stage of fever; it is otherwise at the latter period, either as indicating favourable crisis or fatal termination;—the concomitant symp-

toms determine which of the terminations we are to expect. A pulse of great frequency,—hesitating or intermitting at intervals, is generally considered as a sign of commencing gangrene when it occurs at a late period of the disease,—and it ordinarily is so; but, intermission at every fourth or fifth stroke,—without extraordinary frequency or other unusual circumstance, has often been observed,—by myself at least if not by others, as an attendant sign of crisis,—in so much that I place confidence in it where other signs are obscure. A total suppression of pulse for the space of twelve or fourteen hours has occurred, on some occasions, within my own experience. The symptom is alarming, but not always a sign of approaching death. After a lapse of time, the suspension gave way, the heat returned to the surface and extremities,—and other functions gradually resumed their activity. Respiration, during the continuance of the suspension, was calm and free, the eye and countenance serene: there was no expression of pain or anguish of any kind; and, from the whole circumstances of the case, I was induced to consider the suspension as a peculiar mode of action of the febrile cause influenced by peculiar and unknown conditions of subject.

Respiration.

The function of *respiration* is more or less affected by the action of a febrile cause acting generally,—its conditions more or less connected with the issue of the disease—favourable or fatal. The case is here considered as belonging to the action

CHAP. IV.

of the febrile cause simply; that is, independently of the local derangements to which the organ performing the act of respiration is so liable. Respiration is generally hurried and irregular at the commencement of fever, more particularly periodic fever; but hurried and irregular respiration, as a temporary mode of febrile action during the tumults of invasion, portends no particular danger: if hurried, irregular, laborious and difficult at a late period, the danger portended is great—the event often fatal. In the early period, and indeed through the whole course of the disease, slow respiration,—interrupted and intermixed with deep fetchings and heavy sighing, indicates considerable danger. A state of calm and as it were still respiration, the expansion and contraction of the chest scarcely perceptible, especially as connected with signs of general torpor and evidence of the existence of strong febrile action, is also to be numbered among unfavourable signs,—but I cannot pretend to define the degree. The most suspicious of all the conditions of respiration, abstracted from conditions that belong to direct disorganization of the lungs, consists in a sense of stricture—with a desire to expand the chest without the power to effect it, and without being restrained from doing it by sense of local impediment; more especially as accompanied by a livid or very deep crimson of the countenance, or by a dull, torpid and lurid aspect. The first occurs in the concentrated forms of the gangrenous constitution;

the second in the phlegmatic. They both mark the existence of congestion; viz. blood in the one, coagulated lymph in the other.

The signs which indicate danger, or which give assurance of safety, as drawn from appearances or actions in the alimentary canal from the mouth downwards, are numerous and some of them important. The *tongue* is the part which first presents, and it is a very essential part, being considered and being in reality an index on most occasions of the progress of the febrile act. If the tongue, during the early period of fever, be foul,—covered with a smooth and cream coloured coat—moist, or dry in a moderate degree only, the disease is ordinarily of regular form,—the expectation reasonable that it will proceed to a regular critical termination without accident. If it be rough and somewhat foul,—the foulness adhering tenaciously to the surface, there is reason to believe that the course will be slow and the final crisis imperfect. If it be of a milky or mealy whiteness—uniformly or in patches; more particularly if it be large as if it were swollen, and sometimes as if it were sodden or parboiled; or, if it be leaden coloured—the red shining through the slight covering of white, the saliva ropy and overflowing, or clammy and scanty, the danger is considerable:—the condition indicates a latent malignity liable to explode in fatal accident. Finally, if the tongue be pale, smooth, flaccid, collapsed or diminished in size, the danger is great;—the condition liquescent—terminating in rapid dissolution.

Tongue.

CHAP. IV.

The appearances of the tongue vary in the advanced stages of fever, especially near the critical period; and the signs, drawn from such appearance, are often of considerable reliance in forming a prognostic of the event. If the coat, or foulness which covers the surface of the tongue at the beginning and during the progress of the fever, loosen and separate near a critical period, a crisis is anticipated with some confidence, but not with absolute certainty; for, it happens not unfrequently that, instead of crisis, there is only change in the nature of the symptoms, the disease assuming another form and proceeding in another circle for a period of the same, of longer, or of shorter duration than the original. The sign, taken from the tongue, is thus fallacious as applied to the total disease; it is valid as applied to the completion of one circle of diseased movement. In fevers of a protracted course, the tongue is often covered with a black crust or pellicle extending to the teeth and even to the lips—sometimes thick, sometimes thin, sometimes moist, sometimes dry: it indicates danger,—at best a slow recovery. The tongue is sometimes clean, smooth, red, glossy or shining—generally, not always dry: the sign indicates a tedious course,—and moreover an uncertain event. Tremors and other manifestations of diminished power belong to conditions of muscular action:—they imply danger; but they indicate nothing in particular as appearing in the tongue.

Thirst.

The sensation of *thirst* is sometimes very conspicuous; sometimes little troublesome in the subjects of

febrile disease. It is often connected with ostensible appearances in the tongue and lips: the cause is then easily comprehended and there is no obscurity in the prognostic. In some instances, the tongue is rough and dry as a potsherd—without distinct sensation of thirst:—the sign is unfavourable. Thirst is sometimes insatiable, where the appearances of the tongue indicate nothing very particular. The sign indicates danger to considerable extent; unless the occurrence be merely a mode of action of the paroxysm of a periodic fever. If desire to drink, with smacking of the lips, be constantly present, the patient at the same time drinking very little when drink is offered to him, danger is to be apprehended,—the degree not easily defined.

Food. Aversion to, even abhorrence of food sometimes accompanies fever. It stands among the bad signs; but it is in fact less dangerous than the indifference which swallows without appetite or desire. Depraved tastes, sensations of something nauseous and loathsome—or nasty, where nothing unusual is to be seen, is also ranked among unfavourable signs. It is unfavourable to some extent; but I do not pretend to estimate the degree.

The function of the *stomach,* viz. the retention or rejection of what has been taken down as drink or nourishment, is of special importance in forming an estimate of the danger or safety of febrile disease.

Vomiting. The matters ejected by vomiting have much variety in appearance; and, as such, they furnish a wide field for opinion on the subject of prognostic. Nau- Nausea.

CHAP. IV

sea and vomiting are common symptoms at the commencement of most fevers; especially at the commencement of the more aggravated, whether endemic or infectious. Nausea—of a singular distressing kind, is often simultaneous with the pain of the head, confusion, vertigo or stupor which mark the invasion of fever; and it is then a sign of the existence of a most dangerous form of malady. The nausea does not often in this case terminate by vomiting; or, if vomiting does actually take place, the matter thrown up is rarely any other than what has been recently taken down. The sensation here alluded to amounts, for the most part, to a desire to vomit without the power to effect vomiting,—even without the power to retch. The sensation is referred to the upper orifice of the stomach: it is a most irksome one; and, where it has been simultaneous with the head-ache and first symptoms of invasion, inflammation tending to gangrene, or rather a number of dark coloured points and vessels, containing a thick dark coloured fluid, present themselves about the cardia when the dead body is opened; the cuticular and villous coat being also abraded in numerous places throughout the whole interior, more especially near the upper orifice. Nausea is a symptom of more suspicious import than full and free vomiting, even than vomiting effected through severe and painful retchings. The rejection of what has been drank unchanged, or changed only by the acquisition of a mothery ropiness, indicates more danger than the ejection of yellow bile—even in great quantity. The

vomitings of yellow bile are sometimes prodigious in periodic fevers,—such in fact as if the whole action of the febrile cause were exerted in augmenting the quantity of that secretion. Such excessive discharges of yellow bile by the mouth excite attention—and they are not without import; but they do not in themselves indicate a fatal termination. There is more cause for alarm where the colour is various, viz. green or dark; or, where it is of a changed consistence resembling a mess of mashed leeks or *puls*. The nature of the matters ejected is not unimportant as indicating the conditions and tendencies of the disease; but the ejection of drink, rendered ropy and viscid by the admixture of something secreted from the stomach, more especially as charged with a quantity of shaggy flakes of a darker colour than the mass of the fluid, advances somewhat nearer to positive danger. It presents itself at an early period, increases in quantity and viscidity in the progressive stage; and it is converted, in the retrograde, or decline, into black vomiting of various shades,—from the deepest shade of which recoveries are so rare as to be deemed prodigies. The quantity of fluid ejected from the stomach, in the late stages of some of the fevers that terminate by black vomiting, is enormous, —so far exceeding the quantity of what had been taken down as if the stomach had become the outlet of all the fluids contained within the body. These enormous discharges by the stomach are perhaps critical in the strict sense of the word; but they are fatal, inasmuch as the act is subversive of the orga-

Black Vomiting.

CHAP. IV.

nic structure of the part through which they are made.

Anguish.—Fidgetting.

To the signs of danger or safety, derived from a consideration of the conditions of the stomach, may be added a sense of anxiety and anguish, an impatience of pressure abstracted from sense of pain; and, above all, a fidgetting or restlessness, urging to constant change of place and posture without assignable cause. This last is a bad symptom—and it is a common one in fevers of the gastric class; but, in the more concentrated of the fevers of the West-Indies, it expresses a condition tending to that species of change or disorganization in the stomach which is followed by black vomiting.

Hickup.

Besides vomiting, *hickup* may be considered as connected with the function of the stomach; and it may be considered as furnishing an indication, though a somewhat ambiguous one, of the issue of the disease. It sometimes means nothing of consequence; it sometimes indicates or accompanies crisis; and it sometimes prognosticates with great certainty the approach of death. An obscure and suppressed hickup; especially as following pain at stomach, accompanied with tension of the hypochondria and signs of congestion in the liver or spleen, is, for the most part, a sure prognostic of a fatal termination; on the contrary, a clear and open hickup, proceeding as it were from a strong convulsion of the diaphragm, has often, in my own experience at least, accompanied a favourable crisis—and I calculate upon it where other signs are uncertain.

The due, or undue performance of the function of the *bowels* is a matter of much importance in the history of fever; and a just consideration of the conditions aids materially in forming a correct prognostic of the final issue of the disease. Where the bowels readily obey the stimulation of purgatives; and, where they render effective and feculent evacuation to ordinary stimulations with sensible relief from pains and uneasiness, the prognostic is upon the whole favourable. Where the strongest purgatives, in the strongest doses, have no effect—or no adequate effect, there is cause to apprehend danger: —there is even little ground to infer safety, where the evacuations, so extorted, are copious and watery; or, where they are watery, small, ineffective and by starts, accompanied with a sensation of deficient expulsive power,—a sense of stricture or confinement. If this condition obtain during the early stage, copious, feculent and effective evacuation at the advanced period augurs a favourable change. Bloody, mucous, bilious evacuations mark the prominent local action of the cause of fever,—the event to be estimated in combination with other circumstances. Evacuations, smooth and black like tar or molasses, occur frequently in the latter stages: the indication is dangerous—almost decisively fatal, particularly if the stools be small and viscous; if copious and fluid, it is less alarming; and, in many cases, it marks a mode of crisis—more particularly in certain of the gastric forms of fever.

Alvine Evacuation.

CHAP. IV.

The *urinary secretion* is more or less affected by the action of a general febrile cause; even, the appearance of the urine itself, after it is voided, furnishes indications of importance respecting the progress and termination of the febrile process. At the commencement, and during the early stage of fever, the urine is usually pale, crude and copious; or high coloured, red and scanty. The secretion is sometimes, in a manner, suspended in the more concentrated form of fever,—not as a local action of the febrile cause, but as a part of general suspended secretions:—the indication is inauspicious. In the progress of most fevers, particularly the suppurative, the urine becomes thick and turbid, exhibiting a number of floating clouds of different appearance, which, subsiding at the critical period, form a sediment which marks the actual occurrence of crisis. When the urine from this state, which is that which is termed coction, becomes suddenly pale and colourless; the recurrence of disease, under a new form, is indicated, the act transferred not unfrequently to the sentient system, there produces delirium, tremors, faintings, &c. Black urine is generally considered as indicating a high degree of danger: it is in fact a dangerous, but not uniformly a fatal indication: it sometimes accompanies crisis, particularly in gouty habits.

Urine.

Animal Irritability.

An estimate of the degree and condition of *animal irritability* is peculiarly important, in conjunction with other signs, to aid in forming a correct opi-

nion on the subject of prognostic in fevers. It has been already observed that the law of irritability in the animal habit has analogy with the law of electricity in the physical world; in as much as that, besides its risings and fallings at given times, it is sometimes morbidly accumulated in the whole or in parts—sometimes latent or deficient; and sometimes, while accumulated to excess, it is seemingly fixed, or prevented from acting by the operation of an inexplicable cause of constriction: and further mobile to excess, it is sometimes disposed to explode, in strong and violent, sometimes in feeble and irregular explosions, by very slight causes. If the condition of irritability be equal in all parts of the system; and, if this equality be expressed by easy susceptibility of impression throughout, and followed by energetic and effective action corresponding with the impression, there are grounds to prognosticate favourably of the event. On the contrary, if susceptibility be dull or reluctant,—not from defect or latency of the fund, but from morbid constriction, a favourable prognostic cannot be given with confidence: the immediate act consists in artificial oppression; the effect tends to total stagnation and death. Again, if irritability be latent;—dormant from defect or other change in the fundamental cause that we do not comprehend, but manifesting languor and depression without sensations of pain or indications of material commotion, there is no confidence in the prognostic; there are notwithstanding better expectations that it may be

CHAP. IV.

favourable than in the preceding,—in as much as the means of relief are ordinarily better applied. Direct stimulation constitutes the usual remedy in both cases with the generality of practitioners. In the first, it often accelerates the fatal period; in the second, it generally favours recovery. In the first, abstraction of three, four or more pounds of blood rarely fails, (if the abstraction be properly conducted,) to restore susceptibility, and to put things in train for the reception of other applications directly restorative of health; wine, spirits, opium and others of the directly stimulant class, except by accident, augment the oppression and accelerate the progress of death. In the second, abstraction of one or two pounds of blood brings life into immediate danger; wine, spirits, opium, æther, warm fomentations, warm bathing, frictions with warm and stimulating oils, if judiciously ordered and well applied, often succeed in restoring energy and in removing the actual dangers of the disease.

Besides conditions of fixity from constriction, and of latency from defect, irritability is sometimes so excessively accumulated as to manifest violent explosions, spasms, startings, convulsions, &c. from slight causes; sometimes, though not accumulated in excess, it is so ticklishly balanced as to manifest explosive effects of a different kind, viz. tremors, faintings, inability to move—even to bear to be moved; or suspensions of active power, viz. temporary paralysis, loss of speech, loss of the power of swallowing—and loss of command over the sphincter

Mobility.

muscles. These appearances are dangerous and alarming; but they are not absolutely and abstractedly fatal:—they must be estimated in conjunction with others before definitive opinion be formed.

The functions of the intellectual organ, more or less disturbed by the operation of the cause of fever of every denomination, are necessarily of important consideration in forming an estimate of prognostic of final issue, whether recovery or death. The intellectual faculty comprehends the phœnomena which belong to sleeping and waking, dreaming and various hallucinations which relate to perception, imagination, memory, judgment, &c. If a person ill of fever, of whatever form or denomination that fever may be, sleep calmly and quietly at regular intervals; and, if he be adequately refreshed by his sleep, there are grounds to augur well of the issue. On the contrary, if sleep be disturbed and unrefreshing; and, more especially, if sleep be totally wanting, the suspicions of danger are strong; but the positive degree cannot be easily defined. Long watching is often followed by delirium of one form or other; yet, there is so much of peculiarity in the constitutions of men in this respect as forbids the attempt of establishing a positive rule. There are many instances, in medical record, of persons who have sustained continual watching for seven or eight days,—even longer without delirium and without untoward accident, either in the course or at the issue; but, though such fortunate events often occur, the grounds of suspicion of the danger

Intellect.

Sleep and Watching.

CHAP. IV.

still exist. Watchfulness in itself gives suspicion of danger; but heavy drowsiness, or strong desire to sleep without the power of sleeping, is still more unfavourable.

The forms of mental hallucination are multifarious in kind, and they are varied in degree; but, avoiding prolixity, I shall only notice the points that are most striking. Febrile delirium is sometimes furious, the patient outrageous and perfectly untractable. This furious state is sometimes accompanied with violent excitement in the circulating system, viz. strong and irritated pulses of the heart and arteries, crimson countenance, blood-shot eyes, distensive and rending pains in the head;—sometimes it is accompanied with irregular and tumultuous movements of the heart and arteries without impression of increased force and energy,—the eye clear, the countenance bright, tremors, startings and muscular agitation considerable—changeable and fleeting. The prognostic is unfavourable in both: the catastrophe sudden, often effected by convulsion or coma. Convulsion, stupor, or coma supervening upon delirium are generally fatal; mild delirium, after convulsion or a state of stupor, is, for the most part, indicative of recovery. Coma is at all times a suspicious symptom; but it is sometimes difficult to distinguish it from a species of dozing through which the patient emerges from disease. The furious delirium is more common in the periodic than in the continued forms of fever; and, where furious, the fatal termination is often preci-

pitate,—occasioned, in most cases, by effusion upon the brain. It is only in the more violent, and chiefly in the periodic forms of the fevers of the West-Indies, that delirium presents itself as a conspicuous symptom in the earlier stages: it is not unfrequent at the more advanced periods of the mild and regular; and it sometimes becomes so prominent as to engross almost the whole febrile action, and thus to constitute the disease. If the febrile action be converted simply into a mode of delirium without evidence of inflammation, congestion, effusion or other violence committed on the structure of the organ of intellect,—the danger to life is not upon the whole great; but it is not safe to attempt to calculate it, so as to declare the estimate. If the structure of the organ be actually violated, the chances of recovery are so uncertain that no opinion can be formed on the subject. The diagnostics of the condition are obscure: the appearances of the eye and countenance are of the most dependence on this subject, but not of certainty. For instance, a red and agitated, a wild and staring eye with excessive pain of the head, a confused and agitated countenance, inordinate pulsation of the carotid and temporal arteries, &c. are to be numbered among the signs which indicate inflammation actually existing in the exterior membrane, or of a condition so nearly allied with it as readily to pass into it. A fixed and dull appearance of the eye, a torpid countenance, a dry and rather a pale lip,—with absence of severe pain or material excitement, indicate more or less of con-

CHAP. IV.

gestion, or adhesive inflammation in the substance of the brain and interior membranes. The danger in both is extreme,—greatest in the last. Delirium is sometimes continual, sometimes at intervals,—the latter is the least dangerous. The mode of delirium is sometimes excited, the ideas lively, the imagination brilliant, the mind inexplicably enlightened,—displaying knowledge almost beyond the means of acquirement. In this manner, a person, under the influence of febrile action, sometimes speaks languages with facility of which he has only an imperfect knowledge, and of which he could scarcely at other times bring out a connected sentence. The mode of delirium is different on other occasions,—characterized by depression, viz. the ideas dull, the imagination annihilated and memory so far lost that the individual does not remember his own name, or recognize the most intimate of his former acquaintance. There is danger in both conditions,—the greater degree in the last. Among the various hallucinations which present themselves during the course of fevers, a person sometimes conceives himself to be dead and actually buried: he notwithstanding lives and recovers. He sometimes also conceives himself to be dying, when external signs of death are not striking,—and, in this, he is seldomer deceived. He also often pronounces himself to be well, when his physician has no hope and no cause for hope:—undue confidence, philosophical firmness, or stoical indifference in late stages of the concentrated fever is almost always a certain sign of

death. The lively mode of delirium is upon the whole less dangerous than the depressed; but singing, loud laughter, and some other kinds of joyous expression that occur now and then at late stages of fever, rank among fatal signs.

The appearance of the *eye* and countenance is ordinarily one of the first things that arrests the attention of the physician, when introduced to the apartment of a person ill of fever;—and it is one of the most important to be studied and rightly understood. If the eye be calm and serene, bright and animated at the commencement of fever, there are grounds to augur favourably of the event. If a similar appearance take place at an advanced period, particularly after appearances of a contrary condition, a favourable termination may be expected with still greater confidence. But, though the change of condition alluded to be generally favourable,—it is not so without exception: the eye sometimes becomes calm, clear and bright at the commencement of local gangrene—effected through what may be termed febrile explosion; or, at the commencement of the retrograde course, which tends gradually to dissolution and death. The base of action is the same in both, viz. a change or cessation of febrile irritation,—the issue (recovery or death) different only as a contingence. If the eye be muddy and confused, turgid and prominent, agitated and wild, painful and inflamed at the commencement of fever, there is evidence of a violent disease—and reason to apprehend danger in the subsequent course.

CHAP. IV.

If, from the state of confusion and agitation described, it become comparatively calm and steady; and, if the veins of the *tunica albuginea* become at the same time distended as if they had been injected, the colour of the white becoming dusky or yellow, the danger is positive;—the chances of recovery so obscure as not to be calculable. If the eye roll rapidly, bear light impatiently, as from excessive irritability without the presence of actual inflammation, there is cause to apprehend an untoward event, viz. delirium, spasm, convulsion, or coma. If the motions of the eye be sluggish,—its aspect torpid, dull, inanimate,—without expression or meaning, there is cause for suspicion; and, if with these appearances at the early stage, the colour of the *tunica albuginea* become dingy and yellow at a certain period in the progress; and, more especially, if the veins become distended as if injected,—the danger is declared—the chances of recovery very uncertain: and further, if the eye be sunk, sad and downcast, as if vitality were dormant or deficient, the issue is very doubtful,—the recovery, if effected, not effected without a great deal of management on the part of the physician. If the eye be of a pearly white, prominent, vacant and unmeaning as the eye of an idiot, the danger is considerable,—the condition indicative of stagnation of the venous blood in the more important of the internal organs, viz. lungs, liver or spleen. If it be prominent, pearly white, agitated and wild, or sullen and stern; or, if it roll as if in search of something absent, the danger is imminent,

the condition threatens delirium, spasm or convulsion;—if yellowness supervene suddenly, the case is decided.

Yellow suffusion in the eye, as in jaundice, is no unusual occurrence in the fevers of warm countries, particularly of the West-Indies. It indicates a crisis or change in the condition of the disease,—sometimes favourable, sometimes fatal. The light lemon coloured yellow is generally favourable; the deep yellow—with a shade of brown like that of a Seville orange, is generally fatal; the bright or brilliant yellow is ambiguous.

Countenance.

The indications of safety or danger, drawn from the appearances of the *countenance*, bear a near analogy to those drawn from the appearances of the eye. If the aspect of countenance be bright and clear, the expression animated and cheerful—serene and confident, the disease is ordinarily of a mild character;—it is at least void of malignity or latent danger. Such condition is favourable at the commencement;—it is frequently indicative of crisis at advanced periods. This is true as a general rule; but it is also true that a florid tint of colour, like circassian bloom, is a symptom suspicious, particularly at a late stage, in as much as it indicates the commencement of general colliquescence which tends to dissolution and death. If the visage be surcharged with colour—crimson or dark,—agitated and of a distressful expression; or, if animation be in a manner suspended by a cause of constriction or compaction—the disease is violent; and sudden and

CHAP. IV.

untoward events may be reckoned among the contingencies. When the agitation and appearances of distress subside, the aspect becoming composed without relaxation, expansion or animation, the dangers are great,—the tendency to torpor and congestion decided. If the aspect be torpid, the features shrunk and withered as a fading leaf in autumn; or if it be full, bloated and fixed as a statue, —livid as in sea scurvy, or dark like the colour of mahogany, the dangers are imminent: stagnations exist; convulsions and sudden death are in expectation.

Skin and Temperature.

The condition of the *skin* and its *temperature* constitutes another of the important conditions which attract the attention of the physician; and which, when duly considered, aid him materially in forming an estimate of the nature of the disease while existing, and of the event that is to be expected. If the skin of a person in fever be thin, soft, animated and sensible; the heat above natural but not excessive,—partaking more of increased general warmth than of morbid ardency; and, if it be withal equally diffused to the surface and extremities, the disease is, for the most part, void of malignity;—there are even grounds to believe that the various steps in the febrile process, unless improperly interrupted, will be regular and the final event favourable. On the contrary, if the skin be dry, harsh and thick as if artificially compacted; or dark and livid, the susceptibility so engrossed by a morbid condition, viz. strong action or constriction, as to be

little sensible to irritation; blisters searing but not vesicating; or if they vesicate, the vesicated parts soon becoming dry, withered and black; and if, with this condition of the skin, the heat be concentrated or deep seated, unequally distributed in the different parts of the body,—ardent on the head, on the trunk and particularly at the *præcordia*;—deficient, or only moderately increased at the extremities and on the extreme surface as superficially touched;—caustic and disagreeable to sensation as the part is closely pressed,—the disease is concentrated, not exempt from accident in its early stage, and giving no prospect of safety in its evolution. But if, from the state described, the heat decline at a certain stage in the progress, the ostensible fever subsiding, the skin increasing in thickness, compaction and torpidity, the strongest blisters only searing the surface, or the seared parts becoming black as if gangrened; and if yellowness of the darker shade supervene on this condition, the body becoming tawny or streaked with vibices, ecchymosis, &c. the case may be considered as decided;—the event fatal—unless prevented by the employment of remedies of paramount power. If the skin be dry and pale, harsh, dusky, withered and shrunk at the early part of the disease; or, if it be damp, greasy, dingy, marcid and torpid, so that the irritation of blisters sears but does not vesicate; or, that the vesicles which have been produced soon disappear, the skin underneath shrinking and becoming dry, the foundations of a condition are laid

CHAP. IV.

which tend by a regular process to destruction, if not counteracted by judicious and decisive treatment. Again, if the skin be pale, flaccid and dry, puffy and bloated—without elasticity or reni-tency; or, if it be damp and greasy and flaccid, the danger is imminent,—the tendency colliques-cent,—the issue dissolution. If the body do not waste, according to the usual rule of wasting from the action of acute disease, danger is indicated; and, if the appearance be bloated and statue-like, the prognostic is very unfavourable—the issue gene-rally fatal.

Besides the indications of danger or safety, which are to be drawn from the conditions of the skin as an integral part of the body, opinion of considera-ble importance may often be formed from the secre-tions or excretions that are made through that or-gan. For instance, if perspiration or sweat be warm, fluid, free, copious and universal, accom-panied with a free, open, energetic aud expanding pulse, there are grounds to expect a favourable issue:—the condition described is in fact often indi-cative of perfect crisis. On the contrary, if perspi-ration or sweat be cold, clammy, partial and scanty accompanied with a frequent, small and unenergetic pulse, there are strong grounds to suspect an un-toward event:—the danger is imminent. If perspi-ration, though warm and copious, be such as is ex-torted through agonies of suffering under irregular local actions, rather than such as arises with general relaxation and freedom from partial constriction,—

Perspira-tions.

there is no confidence of safety. Sweat or perspiration is sometimes preternaturally cold, but at the same time fluid, universal and free. The circumstance is not very common; but, where it does occur, it has appeared to myself at least to indicate favourable, but not decisive crisis. Sometimes perspiration is copious, but somewhat viscous or adhesive,—sometimes of a peculiar smell resembling that of fish: the sign is inauspicious,—in my own experience generally fatal.

Eruptions.

Among cuticular signs, which furnish indication of the tendencies of fever to recovery or death, may be reckoned *pustular eruptions* which make their appearance about the mouth at certain stages of the disease. If these eruptions appear at an early stage, clustered upon the *philtrum nasi* and towards the wings of the nose, latent danger is indicated,—sudden and untoward accidents occurring not unfrequently where this appearance is observed. If the eruption do not appear before the fifth or seventh day; and particularly if it appear upon the lips and about the corners of the mouth, rising freely and assuming the suppurative process, the event prognosticated is a favourable one:—the sign in general is indicative of crisis. But, if the eruption do not rise freely; or if, after it has risen, it soon turn hard and dry like hardened knobs or blackish points, the danger indicated is considerable, viz. the recovery tedious,—or, after apparent recovery, relapse occurs, and death—sudden or gradual ensues. Besides pustular eruption about the mouth, large vesications

CHAP. IV.

on different parts of the body, resembling the disease termed *pemphigus* have appeared in successions in several instances, in my own experience, about the time of crisis.—They indicated something; but I cannot pretend to say positively what it was. The patient recovered; and even sometimes recovered so far as to reassume his official duties, when relapse of fever, occurring suddenly, often terminated fatally.

Local Inflammation or Gangrene.

Local inflammation, supervening at a certain stage of fever, has been often considered as in some manner critical of fever. It will be less expected that a critical effect should be ascribed to explosions of local gangrene. It is notwithstanding sufficiently proved by experience that febrile irritations sometimes terminate in this manner. The fever ceases; and death or recovery ensues according to circumstances; viz. the extent of the gangrene and the nature of the part on which it strikes.

The signs of prognostic, here adduced, form a supplement to the preceding descriptive history of fever. They are drawn entirely from my own observation—and they are faithfully stated as what is most common. Few are absolute; the greater number are relative. From the aggregate of many, as estimated separately and balanced with one another, a tolerably correct opinion may be formed of events—favourable or otherwise, where the disease proceeds in the regular organic course; where it manifests its action principally on the sentient system, the estimates of danger or safety are very difficult,—and the inferences by no means sure. There are numerous indications among

the symptoms which present themselves in fever that forebode delirium, spasm, convulsion or coma; but there is scarcely any one that is absolutely conclusive: and when delirium, convulsion, &c. occur, though they are all more or less dangerous according to their degrees and modes, there is no precise rule, in so far as I know, which enables us to fix the precise quantity of the danger. But, though there be generally a forewarning of the contingencies that occur in the different functions of the sentient system previously to the explosion; yet accidents sometimes come suddenly as a flash of lightning, and overwhelm life in a manner not within calculation. And further, besides the accidents which happen to life through the medium of the sentient system—and which cannot be justly calculated; accidents happen in the circulating system of which we cannot attain any foreknowledge, viz. rupture of vessels in the more important internal organs, and sometimes clots of coagulated lymph impacted into the heart or greater vessels which obstruct the passage of the blood: instances have occurred in my own experience where this seemed to be the direct cause of death: —the patient felt it—the physician did not see it.

CHAPTER V.

Proximate Cause of Fever.

CHAP. V.

THE human body consists of various parts and organs of different configuration and of different irritability respectively, destined for the performance of different functions, and connected in a series or system for one end and purpose, viz. the support of the life of the individual and the propagation of the species. The parts or organs, though various in kind, are all stimulated to functionary action, maintained in efficiency, or perverted from their course by causes which act generally on all,—contingently on some more than on others. Besides the different degrees of sensibility, irritability or vitality (by whichsoever name it may be called) of the different parts or organs of the system according to original constitution, there appear to be diurnal or other periods, at which the irritability alluded to rises or falls perceptibly, but inexplicably; that is, by a law beyond

Action and Rest alternate.

our comprehension. The act of life is moved by external stimulation. The source of the stimulation is diffused universally over the surface of the earth; varied in force,—as concentrated by variety of circumstances, and impregnated occasionally with extra substances which irritate; and, thus irritating, pervert or annul the customary action of health. Animal irritability, impressed by the operation of the common cause of fever, manifests action corresponding with the cause through the whole extent of the system.—The action completes its circle and subsides. Susceptibility to impression, lost under the continuance of the act, returns when the action which results from the application of the cause is completed.

From a state of rest, the action is again renewed; and, having completed its circle, it again ceases. Thus action and rest; and rest and action relieve each other in alternate succession through a series of more or less duration—in health or in disease. The health of the system, that is, the integrity and vigour of all its functions, consists in alternate action and rest—of just force and just cadence. The alternations may be accelerated or retarded in time, increased or diminished in force to a certain extent—without implying such subversion of the base of the action as constitutes disease. But if the cause, which moves the action, err greatly in quantity by excess or defect; or, if it be mixed, or impregnated with things that are extraneous and noxious, the cadence and force of the effect are not simply aug-

CHAP. V.

mented or diminished: they are in fact disturbed, the base of the action subverted, a new form induced, and new, or unnatural products brought forth as a consequence of the artificial act thus excited. The morbid, or unnatural actions differ in appearance, according to the nature of the organ or series of parts on which they are principally manifested; and according to contingent conditions in the habit of the individual who is the subject of them. The forms differ, and the shades of difference are multifarious; but they are all comprehended under two general outlines, viz. creative processes—of different forms of union and new production; or, annihilative processes—of different forms of disunion and disorganization. To one or other of these, the first act of the febrile cause may be referred; but, to which ever it may belong, it implies the subversion of the customary action of health. The whole view of the physician is thus confined within the limit of subversion;—the mode, as already observed, is defined by the constitution of the parts on which the principal action moves, in conjunction with the contingent condition of the individual who is the subject of it. This is a fact,—not a hypothesis; and it is one of such importance that it must be kept in view in every step of medical proceeding;—it is the basis on which the medical art rests.

Investigation of Causes.

The physician, whose office implies investigation of the causes of things as they relate to human health, must not permit himself to proceed beyond a visible

point in what respects the application of remedies; but, he may be allowed to assume some latitude of view, in speculating on the nature of causes, both in their formation and in their mode of progress through the different channels of the circulating system, prior to their evolution and explosion in the open febrile act. The material cause of the disease termed fever evidently proceeds from two sources, viz. exhalation from the surface of the earth, and emanation from diseased animal bodies,—applied directly, or by the intervention of substances that have been in contact with the source. The first cause is termed endemic. It rises and falls periodically, modified by season and circumstances in various manners; and it further appears occasionally with extra force and frequency in a manner that cannot be explained:—it is then termed epidemic. It is common to the whole surface of the earth; but it is more abundant in some parts of it than in others. We are ignorant of its precise nature; but we presume, and not without reason, that it is analogous to the cause which moves vegetation; at least, its effects are most apparent where the materials of luxuriant vegetation most abound,—that is, in rich and champaign countries; and in all places where water stagnates, or, where moving slowly in its course, it tends to decomposition. The cause of the endemic is widely diffusible in the air: its force, as applied to the body, is increased by the impulse with which it strikes; hence it is impressive, as moved by currents of wind passing through ravines, hollow ways, and narrow de-

CHAP. V.

files between mountains. It does not adhere to a third body; consequently, the person on whom it acts must necessarily be in communication with the source,—immediately or remotely. The cause of the common infectious fever is generated artificially: it attaches itself to a third body; and, by that means, it is conveyed to distant places. It is capable of concentration and diffusion in various degrees; and, as diffused in a warm and dry atmosphere, it is dissipated and soon lost. The sphere to which its activity extends is a narrow one, rarely manifested beyond the walls of the sick apartment,—unless where conveyed by means of a third body. The specific infections, which occasionally excite fever, are of different kinds and of different degrees of diffusibility. Some spread to a comparatively wide circle; others make no impression except by actual contact.

Channels.

It would be satisfactory, and not indifferent in effect, to ascertain by what channels the material cause of fever enters the human body, by what course it proceeds through the various organs of the circulating system, and at what point of progress it explodes in the genuine febrile act. There is reason to believe, indeed there is evidence almost demonstrative, that the material cause of fever enters the system through the mouths of the absorbents; and there is more than probability in the supposition that it enters through the absorbents of the first passages, viz. mouth and stomach. If it enter by this organ, the progress into the great circulation must be supposed to be made in the customary

channel: it may further be supposed—and with more support than mere probability, that it passes through the heart, as mixed with the common mass of blood, without exciting commotion, the first step of the febrile process appearing in reality to date from the time, when the noxious cause touches the point of structure in the series of capillary vessels, which constitutes an organ of function. It is farther to be borne in mind that the febrile act is not an instantaneous effect of the application of the febrile cause. A space of time intervenes which implies the existence of a precursory, or preparatory process. The space is different in different cases, and it is influenced materially by constitutional habits and accidental contingencies. The common endemic rarely appears before the seventh day, more frequently not before the fourteenth; sometimes not before several weeks, or even months after exposure to the cause, or after removal from the source where the cause exists. The complete and formal action of the infectious fever is, in like manner, seldom observed before the seventh, not generally until the fourteenth, and sometimes not until after the lapse of several weeks. Further, in cases of direct inoculation of infectious matter, the febrile irritation which constitutes the formal disease, rarely occurs before the seventh day,—sometimes not before the fourteenth. And, in many cases, the cause of fever remains dormant for months, excited into action only by contingencies which affect balances, or which augment susceptibilities in an unknown manner.

CHAPTER V.

Proximate Cause of Fever.

CHAP. V.

THE human body consists of various parts and organs of different configuration and of different irritability respectively, destined for the performance of different functions, and connected in a series or system for one end and purpose, viz. the support of the life of the individual and the propagation of the species. The parts or organs, though various in kind, are all stimulated to functionary action, maintained in efficiency, or perverted from their course by causes which act generally on all,—contingently on some more than on others. Besides the different degrees of sensibility, irritability or vitality (by whichsoever name it may be called) of the different parts or organs of the system according to original constitution, there appear to be diurnal or other periods, at which the irritability alluded to rises or falls perceptibly, but inexplicably; that is, by a law beyond

Action and Rest alternate.

CHAP. V.

our comprehension. The act of life is moved by external stimulation. The source of the stimulation is diffused universally over the surface of the earth; varied in force,—as concentrated by variety of circumstances, and impregnated occasionally with extra substances which irritate; and, thus irritating, pervert or annul the customary action of health. Animal irritability, impressed by the operation of the common cause of fever, manifests action corresponding with the cause through the whole extent of the system.—The action completes its circle and subsides. Susceptibility to impression, lost under the continuance of the act, returns when the action which results from the application of the cause is completed.

From a state of rest, the action is again renewed; and, having completed its circle, it again ceases. Thus action and rest; and rest and action relieve each other in alternate succession through a series of more or less duration—in health or in disease. The health of the system, that is, the integrity and vigour of all its functions, consists in alternate action and rest—of just force and just cadence. The alternations may be accelerated or retarded in time, increased or diminished in force to a certain extent—without implying such subversion of the base of the action as constitutes disease. But if the cause, which moves the action, err greatly in quantity by excess or defect; or, if it be mixed, or impregnated with things that are extraneous and noxious, the cadence and force of the effect are not simply aug-

CHAP. V.

mented or diminished: they are in fact disturbed, the base of the action subverted, a new form induced, and new, or unnatural products brought forth as a consequence of the artificial act thus excited. The morbid, or unnatural actions differ in appearance, according to the nature of the organ or series of parts on which they are principally manifested; and according to contingent conditions in the habit of the individual who is the subject of them. The forms differ, and the shades of difference are multifarious; but they are all comprehended under two general outlines, viz. creative processes—of different forms of union and new production; or, annihilative processes—of different forms of disunion and disorganization. To one or other of these, the first act of the febrile cause may be referred; but, to which ever it may belong, it implies the subversion of the customary action of health. The whole view of the physician is thus confined within the limit of subversion;—the mode, as already observed, is defined by the constitution of the parts on which the principal action moves, in conjunction with the contingent condition of the individual who is the subject of it. This is a fact,—not a hypothesis; and it is one of such importance that it must be kept in view in every step of medical proceeding;—it is the basis on which the medical art rests.

Investigation of Causes.

The physician, whose office implies investigation of the causes of things as they relate to human health, must not permit himself to proceed beyond a visible

point in what respects the application of remedies; but, he may be allowed to assume some latitude of view, in speculating on the nature of causes, both in their formation and in their mode of progress through the different channels of the circulating system, prior to their evolution and explosion in the open febrile act. The material cause of the disease termed fever evidently proceeds from two sources, viz. exhalation from the surface of the earth, and emanation from diseased animal bodies,—applied directly, or by the intervention of substances that have been in contact with the source. The first cause is termed endemic. It rises and falls periodically, modified by season and circumstances in various manners; and it further appears occasionally with extra force and frequency in a manner that cannot be explained:—it is then termed epidemic. It is common to the whole surface of the earth; but it is more abundant in some parts of it than in others. We are ignorant of its precise nature; but we presume, and not without reason, that it is analogous to the cause which moves vegetation; at least, its effects are most apparent where the materials of luxuriant vegetation most abound,—that is, in rich and champaign countries; and in all places where water stagnates, or, where moving slowly in its course, it tends to decomposition. The cause of the endemic is widely diffusible in the air: its force, as applied to the body, is increased by the impulse with which it strikes; hence it is impressive, as moved by currents of wind passing through ravines, hollow ways, and narrow de-

CHAP. V.

files between mountains. It does not adhere to a third body; consequently, the person on whom it acts must necessarily be in communication with the source,—immediately or remotely. The cause of the common infectious fever is generated artificially: it attaches itself to a third body; and, by that means, it is conveyed to distant places. It is capable of concentration and diffusion in various degrees; and, as diffused in a warm and dry atmosphere, it is dissipated and soon lost. The sphere to which its activity extends is a narrow one, rarely manifested beyond the walls of the sick apartment,—unless where conveyed by means of a third body. The specific infections, which occasionally excite fever, are of different kinds and of different degrees of diffusibility. Some spread to a comparatively wide circle; others make no impression except by actual contact.

Channels.

It would be satisfactory, and not indifferent in effect, to ascertain by what channels the material cause of fever enters the human body, by what course it proceeds through the various organs of the circulating system, and at what point of progress it explodes in the genuine febrile act. There is reason to believe, indeed there is evidence almost demonstrative, that the material cause of fever enters the system through the mouths of the absorbents; and there is more than probability in the supposition that it enters through the absorbents of the first passages, viz. mouth and stomach. If it enter by this organ, the progress into the great circulation must be supposed to be made in the customary

channel: it may further be supposed—and with more support than mere probability, that it passes through the heart, as mixed with the common mass of blood, without exciting commotion, the first step of the febrile process appearing in reality to date from the time, when the noxious cause touches the point of structure in the series of capillary vessels, which constitutes an organ of function. It is farther to be borne in mind that the febrile act is not an instantaneous effect of the application of the febrile cause. A space of time intervenes which implies the existence of a precursory, or preparatory process. The space is different in different cases, and it is influenced materially by constitutional habits and accidental contingencies. The common endemic rarely appears before the seventh day, more frequently not before the fourteenth; sometimes not before several weeks, or even months after exposure to the cause, or after removal from the source where the cause exists. The complete and formal action of the infectious fever is, in like manner, seldom observed before the seventh, not generally until the fourteenth, and sometimes not until after the lapse of several weeks. Further, in cases of direct inoculation of infectious matter, the febrile irritation which constitutes the formal disease, rarely occurs before the seventh day,—sometimes not before the fourteenth. And, in many cases, the cause of fever remains dormant for months, excited into action only by contingencies which affect balances, or which augment susceptibilities in an unknown manner.

CHAP. V.

It is evident, in the case of inoculated infections, that the inoculated matter passes by the customary channels of absorption into the mass of the blood, excites the febrile irritation and the consequent specific act on the organic capillaries only. We are warranted to conclude from analogies, that the material cause of other fevers enters the system through the same series of vessels; and, we may venture to say with confidence that it enters by the absorbents of the first passages, in as much as its local action is often conspicuous on the stomach and bowels, prior to the development of formal or general fever. —That the cause enters by the absorbents of the mouth and stomach, is inferred from what is generally observed among persons who are exposed to the influence of concentrated swamp exhalations, or the vitiated air of sick apartments. The atmosphere of swamp, in which the cause of fever abounds in excess, rarely fails to produce disagreeable sensations in the stomach, disagreeable taste in the mouth, accompanied with a desire to spit out something that is offensive. This sensation is so strong and unequivocal in some persons, that, if blind folded, they could instantly tell when they entered the circle of noxious swamp air, or came within the sphere of an infected sick apartment. The sensations, which are always disagreeable, are often such as arise from a nauseous unpleasant pepper acting on the fauces and stomach. The signs of the local action are often visible in the mucous membrane which lines the fauces; the sensation is felt strongly at the

upper orifice of the stomach; and, in such case, the effect is removed, and the progress of the disease arrested by the operation of an emetic or strong purgative, eliminating the cause from its first lodgment*.

---

* That the material cause of fever, endemic or infectious, enters the system through the absorbents of the first passages has a show of great probability; and, in so far as respects the infectious fever, the proof is almost demonstrative. I draw the inference from what has occurred in my own person. After the British troops were withdrawn from Holland in the latter end of the year 1799; the Russian auxiliary part of the force, with which I served, was sent to the islands of Jersey and Guernsey for winter cantonment. The gastric fever, which prevailed among them to considerable extent at the time of the embarkation from Holland, was converted, by the time they arrived at Guernsey, into concentrated infectious fever,—by the simple operation of accumulating a number of persons in transport ships, during a tedious passage in cold and damp weather. The Russians were unaccustomed to service similar to that on which they had been employed in Holland; and, like mere animated machines driven from their route, they were helpless in difficulty. I found them at Guernsey, in the beginning of January, 1800, with a long list of sick; and as, in examining their conditions, I had occasion to approach near to their persons, I felt unpleasant impressions in the mouth and throat, extending to the stomach, and accompanied with sensations in its passage as if I had swallowed an acrid disagreeable kind of pepper. The sensation continued the whole of the day; and, about ten at night, when in the act of undressing for bed, I perceived a singular quivering at stomach, followed by a sharp pain which darted to the head—quick as lightning, but which was of temporary duration only. I lay down, felt a glow of heat followed by more or less of perspiration:—the night was passed in a kind of reverie between

CHAP. V.

The change, which the material cause of fever produces upon the constitution of the red blood at its introduction into the circulating mass, cannot be ascertained by any devisable means of experiment. The change is obscure; but there is reason to believe that, whatever it may be, it is not felt until, in the course of circulation, it strike an organic point in the series of capillary vessels. It is at this organic point that the action of health is

---

sleeping and waking, and, with such sensations, as if I had drank largely of Champaigne wine. The tongue in the morning was covered with a thick mucous coat; I had no appetite, and though there was no thirst, cold water in large draughts was particularly grateful. The sensations at stomach were unpleasant, accompanied with nausea and occasional giddiness:—the strength was not impaired; I continued on my legs every day from nine o'clock in the morning until four in the afternoon, visiting the different hoospitals and barracks where the troops were quartered. There was an aversion to solid food for two or three days: raw fruit and large draughts of cold water were acceptable; at night there was dreaming and reverie,—rather than sleep: the bowels refused their office; and nausea, with occasional giddiness, was so troublesome that it required all my resolution to resist the desire of applying some relief; for, to have removed the indisposition in this stage, would have defeated a purpose which I had in view, which was to ascertain the time, after the actual application of the febrile cause—which was here distinctly known, at which the fever formally explodes in action. In this I was disappointed; for about the end of the third day, the bowels recovered their action with more than usual effect; and the disease, which was only local, disappeared in consequence. This history proves distinctly enough the manner in which the cause of infectious fever enters the

CHAP. V.

Point of Action.

subverted, and the action of disease established. The action, constituting disease, has a different movement and a different figure from that of health; and, as it is creative, it manufactures, if one may so speak, a new and peculiar product. The diseased action, as excited by foreign and noxious causes, tends to a premature termination,—and contingently to a fatal one. It completes its circle and ceases; and, if the structure of organs that are important to the continuance of life be not destroyed by the violence, or mode of the act, the constitutional susceptibility re-appears in consequence of the cessation. The cause which ordinarily stimulates the action of health,—and which is always present, acts on the restored susceptibility, re-produces the customary action, and restores its energy in a course of time; or, in the other case, the diseased action produces effects—direct or contingent, which dissolve or overwhelm the vital organization—immediately or remotely; whence death ensues.

---

habit. The cause acts partially on the functions of the first passages, producing nausea, indigestions, flatulencies, costiveness, dreamings at night, sometimes flushing of the face, glistening of the eye, lightness or giddiness of the head,—even sometimes a flow of spirits as if from an over dose of Champaigne wine. The cause of the endemic fever has its first operation on the functions of the first passages likewise; but, instead of additional animal spirits, there is usually diminution, viz. heaviness and oppression:—yet it sometimes happens that, between change from the local to the general action, there is a short interval of apparent high health and unusual alacrity.

CHAP. V.

Nature of the Cause.

The nature and qualities of the remote or material cause of fever have been much discussed by medical writers; but no precise knowledge is attained from their writings respecting it. According to the prevailing doctrine of the time, the remote cause of fever is denominated sedative power; the direct effect of which, as applied to organic life, diminishes the energy of action;—in common language produces debility. The term sedative, as a medical term, is of ambiguous import. In strict interpretation, it implies subtraction from customary force—not subversion of the base of action, with production of a new form. If the healthy action be subverted, and a new action produced by the application of the material cause of fever,—and it is almost a self-evident truth that it is so, we cannot say with propriety that the act is sedative. Every power indeed which, applied to the animal body, arrests the existing action of the system, may, in strict and proper language, be termed sedative by its primary or direct effect; in as much as it constitutes an impulse of force, which subverts and brings to rest the existing movement. This is plain; but, it does not bear on the present case; for the animal machine is so constituted in its nature that the principle of irritability, acted on by the impulse of what is here termed sedative force, is excited into action; and so excited, it re-acts and arrests the progress of the sedative or subversive act in the midst of its course; —unless where the force of impulse is so paramount to the fund of resistance, that subversion, arrest and

immediate death ensue. If this be admitted,—and it is the simple fact, the first impression of the febrile cause, though sedative in its nature as a force of impression, does not produce an action of simply diminished force; but of a new kind and character, as a consequence of a new and stronger impression than that which is customary to the habit. Hence I infer that the material cause of fever is not sedative of the healthy actions of the system; on the contrary, it is stimulative, or rather irritative of new and unnatural action through the whole extent of the organic series of capillary vessels. This changed action constitutes the disease termed fever; and it appears, from a view of the subject in all its latitude, that the cause in its essence—drawing inference from the effect, is of a stimulative or irritative nature; that it enters the body by the mouths of the absorbents—apparently the absorbents of the first passages; that it proceeds through the customary channels of transmission into the great circulation; and that it finally produces the febrile act by irritation of the extreme series of the organic capillaries; thereby occasioning subversion of the mode of action which exists, and giving rise to actions of changed and unnatural forms, through which the different secretions and functions of the system are affected in various ways and degrees. The febrile act is supposed to be general in the system; but, it is often manifested more prominently in some parts, or organs than in others,—a condition apparently owing to the different degrees of susceptibility in

CHAP. V.

the different structures, either existing constitutionally, or produced contingently by causes of accident. The head and stomach are affected by the action of a febrile cause more commonly and more remarkably than any other part of the body; but the mode is varied almost infinitely. Besides the general febrile irritation, more or less regularly balanced, as now stated, the cause sometimes strikes as it were upon one point, or one series of parts, leaving the rest of the system in a manner exempt. This occurs in the ulcerative form, or sore leg; and sometimes in the dysenteric: here the general febrile irritation is scarcely perceptible, notwithstanding that the local disease depends on the action of a general febrile cause,—endemic or infectious, and is actually consequent to a general febrile act.

CHAPTER VI.

Remedies.

CHAP. VI.

AFTER the foregoing history of the action of a febrile cause, according to the degrees of force and conditions of constitution to which that cause is applied; together with notice of the effects which it produces on organic structure, and which are visible in the body after death; it follows, in the order of things, to consider the virtue of the remedies or means which have been employed, or which may be employed to subvert and change the tendency of that perverted action while it goes on, or to remedy the effects which it has already produced on organic structure,—in so far as they are remediable.

The limits of the present work admit of no more than a cursory view of the subject; the present remarks are therefore necessarily confined to the consideration of a few of the principal remedies only.

CHAP. VI.

A. *Subtraction of Blood.*

Subtraction of Blood.

It is a fact, if any thing is to be regarded as fact in medical science, that febrile action consists in actions subverted, changed or modified in some shape or other from the action of health. If this be admitted as preliminary, it follows by consequence that the first just step in the process of cure consists in arresting changed or perverted action; the second, in soliciting or moving action that is analogous to that of health. This is self-evident, and it is farther evident,—in so far as we dare venture to reckon on the certainty of medical evidence, that animal action is moved through the whole extent of the system by the impulse of the circulating blood. If that be granted, it follows by consequence that the withholding the application of the impulse, disturbs the order, even necessarily arrests the very action itself, whether healthy or diseased. The subtraction of the impulse is effected through the subduction of blood from the veins: hence bleeding presents itself as the first remedy in point of time, as it is the most important in point of power for the cure of febrile diseases of any of which we have knowledge. It is demonstrable that subduction of blood from the veins may be so managed as to arrest the existing action at the time; it is thus preliminary of cure, if not absolutely and finally curative in itself; and, as such it is necessary to examine and ascertain the condition to which it is to be applied, so that the prospect of success be sure.

If the condition be the one required, the extent to which the evacuation may be carried with safety; the time at which it may be made with most advantage; and the mode after which it is to be made for the better assuring of the effect, are considerations of consequence of the first importance to be estimated and clearly determined before we proceed to the act of application.

1. The ancient physicians employed bleeding as a remedy for the cure of fever on many occasions; and Galen, the most scientific among the ancients, employed it to great extent on most, viz. to the extent of six *kotylæ*, (sixty ounces at the lowest computation,) or until the patient became faint. Galen continued to be the chief authority among physicians for many ages; but, though the letter remained, the spirit of his practice was lost or not understood by his followers; hence, the means employed for the cure of fever, at the time the brothers Botalli appeared at Asti in Italy, were for the most part nugatory. Leonardo Botalli, who was a man of learning, of modesty and decision, not only revived, but improved on Galen's practice for the cure of febrile diseases in so far as respects bleeding. It was on bleeding that he placed his chief dependence. The quantity abstracted by him was high,—deemed excessive and generally reprobated; but, from what has been done in recent times, it is not to be considered as dangerous. Botalli ordinarily took away two pounds of blood, or two pounds and a half at one time,—sometimes three. The abstraction was repeated in

Quantity.

CHAP. VI.

a few hours—on some occasions to the extent of two more; but the quantity of five pounds does not appear to have been abstracted at one time in any of the cases that are left on record. Sydenham followed Botalli at the interval of a century; he was a disciple, but not to the full extent.—Bleeding, as employed by him, could not be regarded in any other light than as auxiliary:—it moderated violence, probably removed congestions, but it did not arrest the course of the disease abruptly. The army surgeon, whose practice Sydenham notices and credits on the authority of colonel Wyndham, was a true disciple of Botalli—if he did not go beyond him.—Dr. Dover, the buccaneer and inventor of the compound powder of ipecacuanha, was of the same class.

The practice of Sydenham and of Boerhaave, which was a moderating or minorative form of practice, prevailed in the West-Indies during the earlier part of the eighteenth century. Dr. Spence, a respectable practitioner residing at Lucea in the island of Jamaica, published a pamphlet in the year 1776, in which he recommended large and repeated bleeding for the cure of the fevers of the district where he lived; but, though he went farther than his contemporaries, he did not go the length of arresting the course of the disease suddenly and decisively by the practice he recommended. Dr. Mosely, who resided in Jamaica about the same time, and who has written a volume on the diseases of tropical climates, enjoins the subduction of blood *ad deliquium,* at the commencement of the *kausos*

or yellow fever. Deliquium, or fainting is no definition of measure: it sometimes occurs with the loss of a few ounces of blood,—sometimes scarcely with the loss of six pounds. The act of fainting is not therefore a rule of dependence; for, where it occurs from the loss of a small quantity of blood, it proceeds from some secret cause of contingence in the constitution; and in such case, as no important or permament change is made by it on the habit, the end in view is not attained. Dr. Rush, and others of the American physicians carried subtraction of blood to great extent in the American epidemics; but the quantity there subtracted was obtained by repeated subtraction,—not by abstraction at one time:—the general practice was depletory;—the mode of depletion was not abrupt, or such as arrests disease by force.

I have thus noticed, in a cursory manner, the views of the more eminent medical writers on the subject of bleeding as a remedy for the cure of fever; I shall now mention what may be thought to be peculiar to myself. I was strongly prepossessed, from the time I could be supposed capable of forming opinion on a medical subject, with the benefits to be derived from bleeding in most forms of febrile disease; but I have no record of my opinions or practice, except from memory, prior to the year 1774. I resided in the island of Jamaica from the year 1774 to the year 1778; and, during that time I employed the lancet with great freedom; but I rarely took more blood at one time from any one

CHAP. VI.

person than twenty or twenty-four ounces. The quantity taken at one time from persons who were under my inspection in St. Domingo, between the years 1796 and 1798, was generally from twenty to thirty ounces; in some cases, three pounds and upwards, particularly where I took upon myself the whole responsibility of the case. It was usually two pounds,—in some cases, between three and four at the depot of military recruits and invalids during the year 1801,—at the time I executed the office of physician to that establishment. In the West-Indies, in the island of Barbados, and more expressly in the hospital of the Royal Artillery during the years 1813 and 1814, the quantity subtracted at one time was rarely less than three pounds, frequently four or five,—sometimes six; and, in a few instances, the vein was re-opened at a short interval, the blood allowed to flow to the extent of four pounds additional, amounting in all to ten pounds within twenty-four hours. It is almost unnecessary to say that it was only in the most concentrated forms of disease,—particularly in forms which indicate congestions or adhesive inflammations in the substance of the brain, that these excessive evacuations were necessary or proper. They may appear to the reader, who has no knowledge from experience of such forms of disease, to be unsafe; but, I am warranted to say that no accident occurred in any instance from the most excessive bleedings that were made in the Artillery hospital,—and I may further add that strength was so little impaired by the effect, that

the greater number of persons so treated returned to their duty within a fortnight in the full vigour of health. The practice to which I now allude was similar in other corps, and in other islands in the windward and leeward island station; but rarely to the same extent as at Barbados, in the hospital of the Royal Artillery, which was under the immediate care of Mr. Thomas,—a most praise worthy officer.—To what I have now said on the subject of bleeding among the soldiers of the army,—the concerns of whose health were placed under my superintendence; I take the opportunity of noticing that the surgeons of the Royal Navy, who served on the windward and leeward island station during this period, employed bleeding with great freedom, both on board of ship and in the hospitals on shore, but not to the extent here stated. The quantity taken away by the medical officers of the Navy, rarely as I am informed, exceeded two pounds at one time; but it was repeated at the interval of a few hours if the force of the disease was not broken by the first abstraction.

2. If the arrest of the diseased course, implying the abrupt cure of fever, be the main object in the view of the physician, it is evident that the sooner the remedy, viz. subtraction of blood be made, the more certain and the more perfect will be the effect. If the subtraction be made within six hours from the invasion of continued fever; or, before the paroxysm of the periodic fever of violent excitement has attained its acme; and, if it be conducted with all

Time.

CHAP. VI

the energy, and aided by all the attentions that are necessary to give the operation effect,—the diseased course is generally arrested, the susceptibility to the stimulation of causes which maintain health in its ordinary train restored; consequently the disease is cured, or prepared to be easily cured. This is comprehensible enough in forms of excited action. It requires consideration in others; for instance where action is languid,—oppressed by congestions or other impediments, there is ambiguity on the superficial view; on the more correct view, there is conviction that blood cannot be too soon abstracted; for, as it is plausible in theory, it is true in experience that the movement in the circulation produced by the eduction of blood, constitutes the direct means of removing the impediment. The effect is comparatively more certain as the congestion is recently formed; but effect is not denied to the remedy, at whatever period the evidence of the condition alluded to be discovered. Bleeding is often preliminary, as it assures the good effect of other means that are employed for the cure of fever; other means, particularly warmth, warm bathing, warm steams, or warm fomentations, even wine and internal cordials are sometimes necessary to prepare and assure the salutary effect of bleeding; more particularly as employed at the more advanced stages of the disease. The simple act of abstracting blood is often decisively effectual in arresting the course of fever, when resorted to at an early period and properly conducted in all its steps: it

has salutary, though less decisive effects, where the course is more advanced, that is, beyond the third day: it is not decisive,—but it is not prohibited even at late periods. It may not then be safe to carry it to the extent of effecting precipitate arrest; but it is safe, as well managed,—and it may be so managed as to obviate impending dangers and often to facilitate the movements of regular crisis. Bleeding is moreover safe, and the effect often important at the first moments of relapse; in as much as it removes congestions, and thereby prevents effusions into internal cavities, or into the substance of internal organs deprived of elasticity by the preceding course of the disease. But, though beneficial in the case stated, it is only conditionally so; for, if not seconded by well considered means of stimulation—general or local, the chances are that it will do more harm than good. Bleeding, as well as other remedies of strong operation, is to be avoided under favourable appearances of approaching crisis; on the contrary, where the critical power labours, and the critical effect is marred or imperfect, the abstraction of a given quantity of blood is often followed by marked and signal benefit.

3. Besides quantity and time, the mode in which the subtraction is made is a matter of great importance to the success of the effect. The general basis, on which subtraction of blood from the circulating mass acts on the organic system, being kept in view; the mode, as calculated to produce the precise effect, must necessarily vary according to the condition of

CHAP. VI.

Mode.

In violent forms—sanguine.

the subject to which it is applied. If the disease be of concentrated force—with violent action of the heart and arteries, the patient is to be laid in a recumbent posture, the head somewhat elevated, a large vein or two large veins to be selected, and a large opening made in the veins, so that the subduction be sudden as it can possibly be made. Instead of measuring quantity by ounces in the prescription book, or trusting the measure to the discretion of the subordinate operator, the physician ought to be present and judge the measure by the effect. It is here necessary that the stream be allowed to flow until some change be produced in the circumstances of the case, viz. until the stricture of the skin relax, until pains and distresses diminish or cease; in short, until every animal action, voluntary or involuntary, move with freedom and ease. Faintness, vomiting and evacuations by stool often supervene under the act of subduction as conducted in this manner; and where the faintness amounts to actual fainting, the evacuations by vomit and stool to free vomiting and purging, the morbid action may be considered as arrested, the disease cured or rendered susceptible of easy cure. If fainting supervene, the arm is to be bound up, the patient excited and refreshed by suitable means of stimulation until the recovery be assured. When that is effected, the actual condition is to be minutely examined; and if any symptom of uneasiness remain, viz. any impediment to respiration, any pain in the head—either as reclined on the pillow

or as moved suddenly and violently, constriction of the surface, contraction and hardness of the pulse; the vein is to be re-opened, the stream of blood allowed to flow under the immediate inspection of the physician until the effect sought for be attained; that is, until evidence of the arrest of the disease be completely established. If the case be complicated with prominent local affection; more especially with pain and oppression in the head, the temporal artery is to be opened in preference to a vein in the arm. The effect is more direct:—there is no danger from the operation and little difficulty in performing it. In cases, where torpor is a prominent symptom, indicating congestion or adhesive inflammation in the interior membranes and substance of the brain itself, the jugular vein presents the more direct channel through which the subduction should be made; but the trouble and difficulty connected with the correct performance of the operation stood in the way of its being often resorted to in the hospitals which I superintended.

In phlegmatic—violent.

2. In fevers which occur in the phlegmatic constitution, characterized by symptoms of lymphous congestion or adhesive inflammation,—general or local; the quantity of blood which may be subtracted from the mass, without appearance of fainting, or arrest of the diseased course, is often enormously great; and, great as it may be, the end in view is not safely and perfectly attained without the aid of other means than simple subtraction. Hence it is recommended, where the disease presents it-

CHAP. VI.

self under the form alluded to, after two pounds of blood, more or less according to circumstances, have been subtracted from the vein, that the arm be bound up, the patient immersed for twenty minutes or half an hour in a warm bath of rather high temperature, the whole body, particularly the extremities rubbed with soap and scrubbed with brushes,—the scrubbing continued, not only until all incrusted dirt be removed from the skin, but until the skin become animated and acutely sensible; that the bandage be then removed, and that the blood allowed to flow until a change of condition be induced,—indicated by faintness, sickness, vomiting, evacuation by stool; or by energy, freedom and expansion in the pulsations of the arterial system, accompanied with sensations of freedom and ease in all the animal functions. It is impossible to say *a priori* what quantity may be necessary to produce this effect in any given case; but, if things be managed in the manner here enjoined, two pounds additional will ordinarily suffice.—When the contemplated arrest has been effected by the proper application of the means stated; the case is laid open for the effect of others which excite and forcibly maintain the customary action of health.

3. In fevers which occur in the gangrenous constitution, whether connected with general or local torpor and stagnation; abstraction of blood is rarely effective of purpose,—and often not safe, without combination with other means of conservative or auxiliary power adapted to the circumstances of

the case. Among these are to be reckoned a pure and refreshing atmosphere as applied to the body in frequent successions, immersion in a warm bath, rubbing with soap and scrubbing with brushes. When the circulation is animated by the application of the means here stated, the vein is to be opened, and the blood allowed to flow until there be evidence that the congestion is resolved and a complete change of condition effected. The head, lungs, liver and spleen are the principal organs subject to congestion or stagnation. The indication that such congestion is resolved, by the treatment adopted, presents itself in the freedom with which the several organic functions are performed, viz. in energy, freedom, and expansion of pulse; and in diffusion of the current of life and activity to the surface and extremities of the body. The quantity requisite for effecting resolution cannot be measured *a priori*. It is often considerable,—rarely less, with every advantage in administration, than two pounds, sometimes not less than four. It is generally proper, in the case under view, that the blood be drawn off while the patient is in a recumbent posture; and it is often necessary that the flow of the blood be stopped at intervals, that the body be alternately moved by stimulation, or suffered to remain at rest under immersion—with a view to effect purpose by alternate motion and rest, or to ascertain the progress that has been made in effecting it.

Gangrenous.

4. In fevers, the principal action of which is manifested on the system of serous secretions, whe-

CHAP. VI.

ther by constriction and suspension; or by convulsive—irregular action and other mode of derangement, the subtraction of blood is often a remedy of value; but it is only of value according to the manner in which it is managed. It is here that immersion in warm water, fomentations with flannels wrung out of hot water, rubbing the body with soap and scrubbing it with brushes, frictions with warm and stimulating oils, &c. conduce materially to assure the beneficial effect. By means of these assistances, changes are often induced on febrile action by the subduction of two pounds of blood, which would otherwise have scarcely been induced by four, or which could not have been attained by any quantity that cautious men would venture to take away. Where the disease is advanced in its course; and where there are indications of weakness, whether from oppression of important organs or other cause, it is proper, if bleeding be approved as the remedy, that great caution be employed in the management of it. It is advisable, for example, that the vein be compressed at intervals during the operation with a view to ascertain the condition of things, and to estimate the probability of attaining the effect by a farther proceeding; for, as there are many cases where we may act fearlessly in subtracting blood, so there are others where we must proceed to the object step by step,—and with cautious circumspection of all the connecting conditions.

Serous—complicated.

General Remarks and Cautions.

The above are a few of the circumstances to be attended to in subtracting blood from the febrile

subject as relative to quantity, time and mode. It is proved in experience,—and the reason of it is comprehensible to those who understand the laws of animal economy, that the subtraction of a large quantity of blood from the circulating mass frequently arrests the course of a febrile disease,—and thereby lays the case open to the action of other powers which restore health abruptly—and often completely. The case has been proved times without number in my own experience; and I can add with a safe conscience that, though the quantity taken away was often enormous in the estimate of many, the effect was in no instance destructive of life:—in most, it was decidedly curative of disease. I have often had cause to regret the timidity,—I have no cause to reproach myself with the boldness of my practice. But, though I say this in truth, I do not say that bleeding in large—even in any quantity, is uniformly proper, or uniformly safe. I am warranted to say that prescribed with consideration, and conducted with management in execution, it is both a safe and powerful remedy; either decisive of cure from its own effect, or preparatory of the curative effect of others. If there be no prohibitory circumstances in the case, one bleeding is to be preferred to repeated small bleedings; for small bleedings, though they diminish violence, and thereby avert the destruction of organic structures, do not prevent the diseased action from proceeding through the regular process of what is termed coction to a constituted period of formal crisis. But, as prevention is

CHAP. VI.

the professed and proper object of the military physician, whose fees are not multiplied by the protracted course of fevers, the decisive means, if they be at the same time the safe means, are those which are to be adopted,—and they are those which are here recommended.

Modified Abstractions.

5. What is said above relates to abstraction of blood in large quantity as a decisive remedy for the cure of fever. I now advert to the effect of small bleedings repeated at short intervals. These, as experience shows, are often of importance in conducting the disease to a safe issue;—sometimes indeed, the small bleeding is the only mode of bleeding that is admissible. The abstraction of blood seems, by diminishing quantity in the circulating canals, to act on the condition of the blood itself. This is almost submitted to the inspection of the eye in the numerous experiments that are made contingently in the treatment of diseases. If the condition of the blood be changed by the abstraction of quantity, the organic action, which follows as a consequence, and which corresponds with the nature of the impulse which moves it, is also necessarily changed;—hence one important step is obtained—but not a final one. Where the energies of life are oppressed, as connected with a bad condition of the blood and humours; whether occurring in eruptive, petechial, gangrenous or putrid fevers, accompanied or unaccompanied with abscesses and ulcerations, the subtraction of blood in small quantity and repeated at short intervals; especially as combined, or succeeded by a series of sti-

mulations, frictions, wine, internal cordials, change of place, and gestation in open air in suitable carriages, conduce materially to solicit the power of life; or to render it susceptible of such solicitations as conduct it to its customary channels and maintain its efficiency in its recovered course. But, though I hold the abstraction of blood to be a remedy of the first importance for the abrupt and successful cure of fever, either primarily or secondarily; yet I am free to own that its good effect principally depends on the manner of adjusting the abstraction to the condition. It often fails, and even sometimes does harm where, employed as principal, its real place is only that of auxiliary; and *per contra*, where employed as auxiliary, its real place is that of principal. In this manner, in fevers which occur in the phlegmatic and gangrenous constitutions, the subtraction of blood, not accompanied with, or followed by the application of powers that stimulate to a new train of action analogous to the action of health, is often injurious, and even sometimes justly accused of accelerating the steps of death. It is self-evident that the subtraction of blood has a tendency to render the system susceptible of stimulation; and it is proved by experience that, where constitutional irritability is high and open, the effect of subtraction is of itself sufficient to assure the reproduction of the new or healthy action; where it is low and dormant, as in the gangrenous and phlegmatic constitutions; the healthy or progressive act, though the restrictive cause be removed, may not, or does not appear with-

CHAP. VI.

out stimulation of stronger power than that which excites and maintains the ordinary action of health; —and, if the progressive act be not moved, it is reasonable to conclude that the retrograde will be accelerated. This is obvious enough to common apprehension; and, if the fact be known and duly estimated, there can be no great difficulty in accounting for the unfortunate events here noticed; and, what is of more consequence, of discovering the means whereby their occurrence may be prevented.

B. *Heat.*

The application of heat to the surface of the body, whether by immersion in hot water, hot steams, high atmospheric temperature, direct impression of heated bodies, viz. hot flannels, hot bricks, billets of the heavier woods taken from the fire, bags filled with hot sand, bottles filled with hot water, or the contact of hot blooded animals, presents itself as an auxiliary of such importance in various conditions of febrile disease as necessarily solicits notice in this place. The influence of heat stimulates the action of animal bodies generally or partially: a certain degree of it is essential to the continuance of life; and, it is on the proper proportion and distribution of it throngh the habit, that vigour and energy in a great measure depend. The application of heat to the surface, in moist or dry form, is often preparatory of bleeding, or other remedies employed for the cure of fever;—it even

Dry Heat.

sometimes cures the disease by its own power. The sensations of cold are often vehement at the commencement of fevers, particularly at the commencement of fevers of the periodic class. In such, they ordinarily alternate with flushings of heat; and they for the most part abate,—even vanish at a given time as a condition of the febrile process. The sense of cold, instead of being intermixed with flushings of heat, is sometimes deep and obscure,—continued and uniform, the skin torpid in a temperature of ninety,—even scarcely warmed, or supported in warmth by a bath exceeding a hundred degrees of Fahrenheit's thermometer. This sense of dead cold presents itself in certain forms of epidemic fever of the phlegmatic character, manifesting prominent signs of action in the substance of the brain. The application of heat by immersion in water or steam, or the contact of heated bodies, frictions with hot flannels, stimulating oils, &c. which infuse heat and solicit the tide of circulation to the surface, is here directly indicated. It is preliminary of all others; and, as it is obvious to common apprehension that, while it excites animal action generally and entices the circulation of blood to the surface and extremities of the body, it is calculated, by its influence on organism, to diminish internal congestion mechanically,—in so far as congestion is induced or augmented by external constriction: and farther, while it acts on the circulating system in the manner here stated, it also acts powerfully and agreeably on the sentient, exciting or restoring lost

CHAP. VI.

sensibility, and thereby laying the case open to be acted on by other means. The fact is founded and the inference is direct; but I may add in illustration of it that, if an attempt be made to abstract blood from the veins under the form and degree of coldness and torpor here alluded to, the blood either does not flow at all; or, if it flow, the effect on the issue of the disease is precarious,—not improbably fatal; on the contrary, if the circulation be previously animated by the infusion of external heat, either in moist or dry form, blood may be subtracted with safety and with effect—either as arresting the course of the fever by its own power; or, as restoring the condition of general susceptibility through which it is prepared to be arrested by others.

The ancients employed warm fomentations, immersions in warm water, affusions of warm water, frictions with warm oil, &c. to great extent, and apparently with great effect in various forms of fever. Galen, the most scientific and skilful among the ancients, conducted them in a manner to give impression to the act, and, at the same time, with a luxury and elegance that could scarcely fail to make them acceptable to the most fastidious. Warm bathing, and warm fomentations are occasionally employed by British practitioners at different stages of fever; but, in so far as I am enabled to judge from accidental observation of the management, not in a manner to assure all the benefit that warm bathing and warm fomentations are capable of producing. The practice of the ancients is adopted,—the prin-

Warm Bath.

bal is not fully comprehended; but, as the remedy is important in itself, it is necessary, in order to obtain from it all the good which it is capable of doing, to administer it with all useful accompaniments, viz. it is essential that the air of the bathing-room be pure and of a refreshing temperature,—cool in summer and in hot climates, warm in winter and in cold weather; that the patient be undressed and laid, with all the care and tenderness that his condition requires, in a convenient bathing vessel, the water sufficient to cover every part of the body, the temperature agreeable to actual feeling rather than measured by a presupposed degree on the scale of a thermometer. The water employed is ordinarily pure fountain or well water: there are particular cases where sea water may be used with advantage; and others where the addition of *eau de Cologne*, or, in defect of that, *Aqua Ammoniæ*, materially heightens the effect. If the medical object here in view be change in the conditions of the diseased state, and not simply purification of the person, three quarters of an hour, or even an entire hour will not be more than sufficient to afford the chances of its being properly effected. The act of rubbing the body with soap while immersed in the bath, of scrubbing with brushes in every the most torpid part—hidden or exposed, aid materially in restoring animation as a primary object; and, when this is in some degree attained, if there be indications of internal congestion, or sluggish general circulation, subtraction of blood presents itself as a

CHAP. VI.

direct remedy. If the remedy be approved, a vein is to be opened in the arm, the blood allowed to flow in the manner and to the quantity judged suitable to the circumstance of the case—the scrubbing, &c. continued while it flows; the hands, breast, head and face occasionally sprinkled with cold water,—wine, or other cordial given internally on certain occasions, while the discipline described is submitted to.—The patient, treated in this manner and with every necessary attention to his condition, often expresses sensations of ease and even of pleasure; in as much as he has a consciousness of the movements of life at every pore; and, while sensations of pleasure produced in this manner often overcome the sufferings of pain, the force of the disease is comparatively diminished, so as to be brought under the power of remedies that, without such auxiliary means, would fail to make impression on it.

Frictions.

C. *Cold.—Affusion of cold water.—Cold drink.*

The sudden application of cold to the febrile subject, whether by the affusion of cold water on the surface, or the administering of cold drink internally, is another of the great remedial powers employed by physicians for the abrupt cure of fever—or for diminishing its dangers. The practice, common with the ancients and one of their principal engines in dangerous and doubtful cases, was overlooked by their successors; insomuch, that when re-introduced

lately in England, it presented itself in some degree as a new discovery. The limits prescribed to this work do not permit me to trace the history of this remedy through all its steps and stages; and it is not in fact of so much consequence to know by whom it was introduced, by whom it was approved, or by whom rejected, as to investigate and ascertain the principle on which it acts, and to adjust the manner of applying it when necessary, so as to obtain from it the precise and just effect. The ancients, and all of the moderns who have adopted the practice of affusing cold water on the surface of the febrile subject appear, with the exception of Dehahn, to have had recourse to cold bathing, or cold affusion only under the existence of an excess of febrile heat. Whether they believed the essence and being of fever to consist in excess of heat, or to be only accessorily connected with it, they seem to have considered the subtraction of the heat, by the application of the cold, as the direct cause on which the success of the remedy depended. The case of Dehahn shakes the basis of this doctrine; and there are multitudes of instances in my own experience which lead to the same inference as that of Dehahn. —I shall briefly state the facts and histories.

Hippocrates, Galen and the late Dr. Currie of Liverpool, who is generally regarded as the person who introduced the practice of cold affusion into England; at least who gave it currency among the medical practitioners of this country, rest their faith of success on the previous existence and subsequent

CHAP. VI.

Principle.

subtraction of preternatural heat. The cause is an obvious one—the reasoning specious; and it may even be added that the testimonies recorded of the good effects of the remedy, as directed by this principle, are numerous in English hospitals, civil as well as military. The practice of cold affusion, directed by this view, was transferred to the British military hospitals in the West-Indies as well as other parts, and the good effects have been generally proclaimed by official reports from that country—as decisive. Case histories of fever, with remark on the effect of remedies employed for their cure, have been written with more or less detail and precision in the military hospitals of the Windward and Leeward island station since the year 1805; and, by referring to such of these cases as are still preserved in the office of the Inspector of hospitals at Barbados, the affusion of cold water on the surface appears at one time to stand in the prescription books as a remedy of principal dependence. It was prescribed only where the temperature of the body was preternaturally increased; and, so prescribed, the reports stated on some occasions that heat was moderated, refreshment sensible, relief temporary—sometimes permanent—sometimes not noticeable. This was ordinarily noted in the detailed history; and it seemed, upon the whole, to imply a favourable inference of the power of the remedy. It became difficult, on closer examination, to estimate the degree of it; for, the columns of mortality in the returns did not show any material diminution in the

aggregate number of the deaths, where affusion was the remedy of trust, and where it was not at all or only very partially employed. This fact is official as drawn from a view of the hospital returns; and, trusting to its accuracy, we can scarcely avoid the conclusion that the favourable reports, usually made of the virtues of the remedy, are not altogether founded; or, that the circumstance under which the remedy was applied, viz. the presence of increased heat, is not the true condition by which the affusion is to be directed.

The fact now stated leaves room for more than doubt that the principle, assumed by the author of the medical reports on the effects of water, is not the true one. In the case of Dehahn, the surface was of an icy coldness; yet the effect of sponging with cold water was grateful and cordial; and, in the opinion of Dehahn himself, the actual means which saved life. In the first stages of my own experience, the temperature of the body did not present itself as an essential condition for authorizing the application of the remedy. It was sometimes high, sometimes low,—even lower than the standard of health by some degrees; yet the effect was salutary, independently of these varying conditions. The first experiment which I ventured to make on this subject, was on the body of a negro boy who appeared to be in the act of dying;—the temperature, in so far as I recollect, not higher than natural. The body was past all hopes of recovery; he was notwithstanding revived, and apparently pre-

Principle of the Author.

CHAP. VI.

vented from dying for some hours by repeated aspersions with cold water. The second was an European sailor on board of ship,—recently attacked with fever. He was a vigorous and robust man; the temperature was high and the arterial action violent. Blood was subtracted from the arm to considerable extent; and several buckets of water, drawn immediately from the sea, were poured upon the head and shoulders. The third was in like manner an European sailor—a youth—at an advanced stage of the disease; the temperature was below natural,—mobility so excessive as to threaten fainting when the head was raised from the pillow. Here the head and face were sprinkled with cold salt water; and, the patient being thereby refreshed, an entire bucket full was poured upon the head and shoulders. The effect was salutary; the heat rose to a higher scale, vigour was restored—and signs of recovery were visible from this date. The instances in my own experience—and even in the experience of some others, are so numerous and so pointed as to the inconsequence of temperature, that I should not have thought it necessary or proper to dwell upon the subject, had not the precept of the author of the medical reports such possession of the public mind at the present time, as to deter almost every one from employing the remedy where the prescribed condition does not exist in an open and marked degree. I am not prone to controvert opinion for the sake of controversy; but I cannot help saying that the precept of Dr. Currie limits the remedy to

a narrow sphere; it even interdicts it where the experience of others has sanctioned its safety and proved its good effect. This is a fact, and I cannot in justice to the truth of science, do otherwise than assert it. It is in my power to give numerous illustrations of it; but I abstain from filling my pages with things that are almost self-evident to those who consider and reflect; and, on those who neither consider nor reflect, facts and arguments make no impression.

I think I may venture to say that the salutary action of cold affusion in febrile diseases, is not necessarily and indispensably connected with the presence of increased heat. The affusion, though made in the most correct manner, is sometimes void of effect where the temperature is above the natural standard; sometimes the temperature is reduced, the fever notwithstanding continues, and the dangers of the disease increase—apparently as a consequence of the action of the remedy. But, as the application of this remedy is not, as now observed, always salutary where the temperature is high; so it is not always injurious where heat is below the standard of health. It is even then salutary—raising temperature to a just standard, animating circulation and giving force and energy to the renewed action of health in many instances. If this fact be admitted,—and it stands on testimony that cannot be shaken, some other principle besides the evidence of increased heat of surface must be sought for to direct the application of the remedy; and some other means of explaining the

CHAP. VI.

effect of the operation must be resorted to beyond changes simply induced upon temperature. The enquiry is an important one; for, unless the rule of applying the remedy be shown to rest on a general basis, the application will be a random application, the effect uncertain, the consequences dangerous—sometimes fatal.

It is within every mans comprehension, and it has, we may presume, been proved by most men's experience, that the sudden application of cold water to the surface of the naked body strongly and forcibly impresses the existing organic action of the whole system,—even so strongly impresses it as to arrest it for a time, whether natural or diseased. If action be arrested by the impression of a forcible cause; and, if the structure of the organ in which the action moves be not injured, or destroyed by the force of the impression effecting such arrest, the inherent energy of life endeavours to re-act, and the re-action naturally recurs to customary channels, so as to re-assume, in due time, the constituted action of health. If this be admitted—and it is a fact of obvious and frequent occurrence, the affusion of cold water on the surface of the febrile subject presents itself as the means of directly arresting the diseased course by its own power, and of thus laying the case open to the action of causes calculated to renew that which is natural—not through the subtraction of heat, but through direct impression upon organism; thereby preparing a condition which leads to, and which often in fact terminates

ontingently in a form of action which is analogous vith that of health. The change in temperature ollows—does not precede the change produced in he condition of the action, viz. lowered where pre-ernaturally high, raised where preternaturally and norbidly low. This is a demonstrable fact: it is often lemonstrated in experience,—and it may be con-idered as the limit of our knowledge on the subject.

As the effect of the sudden application of cold vater to the surface, like other causes of impression, vill not be efficient and permanent, unless the whole rganic series be of equal or nearly of equal sus-eptibility in every part of the system; the first step in the physician's course is necessarily directed to ascertain the existence or non-existence of that con-dition. If it be present in the requisite degree in any given case, the remedy may be applied with prospect of benefit at any period of the course; hough with prospects of decisive and permanent enefit only in proportion to the simplicity of form, —and instability of action connected with the new existence, or short duration of the diseased course. If the condition do not exist in the case as it presents itself, the preparation of it is indispensable; but he proper preparation of it can only be effected by combination of means,—sometimes apparently op-posite in their nature to each other. The prepara-ion to which I allude is important to success; I shall herefore endeavour to unveil the principle on which t depends, detailing briefly—and as clearly as I an, the process through which it is to be attained.

Preparation.

CHAP. VI.

In recent cases of fever of the simpler form, more especially of such as arise in crowded barracks, crowded transport ships or other crowded and ill ventilated places, characterized for the most part by a hot and glowing skin, pains acute and changeable, pulse frequent—quick and buoyant, absence of internal congestions, &c. the condition of susceptibility, so imperiously required, is ordinarily present in the requisite degree,—and the affusion of cold water on the surface is then ordinarily a remedy of safety and efficacy without preparation, or without preparation of a complicated kind. On the contrary, preparation is indispensable in the more concentrated forms in every stage of progress; and the means of accomplishing it are then often complicated —even opposite in their nature to each other. If arterial action be strong and vehement; and, more especially, if it be oppressed and as it were confined by local impediment, the pulsations hard, contracted, deep and inexpansile, the skin hot and ardent, particularly at the præcordia,—or, thick, compacted and torpid; the abstraction of blood, whatever be the degree of heat marked on the scale of the thermometer, is an indispensable precursor of the cold affusion. The quantity to be taken away, in the case described, can only be determined by the change which arises under the act of abstraction; viz. ease, freedom and expansion in arterial movement, relaxation of the surface and signs of susceptibility to ordinary powers of impression. Immersion of the body in warm water, purification and friction of the

skin with soap and brushes, aid materially in effecting the purpose of preparation here in view; but they are feeble and imperfect as unaccompanied by subtraction of blood. In other forms of fever, where signs of internal congestion are prominent, and where they are accompanied with a cold and torpid state of the skin, a deep seated, sluggish and oppressed pulse; immersion in a bath of high temperature and frictions with soap and brushes take precedence of the abstraction of blood, but do not supersede the necessity of it. If the febrile action be accompanied with tremors, startings, disposition to faint, inability to rise up from muscular weakness, delirium—without marks of congestion in the brain, a frequent, soft and weak pulse, soft and inelastic state of the skin, general mobility or increased sensibility to all forms of impression; the preparation for the affusion of cold water to the surface, instead of being made by abstraction, is to be made through warm or tepid baths regulated by the feeling of what is agreeable,—frictions with stimulating oils, exposure to cool and refreshing air; and, if it can be attained, gestation in the open air in spring or other carriages,—to which may be added wine or or other suitable internal cordial. When the state of things has been changed by these and other similar processes, so as not only to be easily susceptible of impression, but to be effective of re-action when impressed, the affusion or aspersion with cold water, more particularly with cold salt water, may be made with confidence of benefit,—at least without dread

CHAP. VI

of injury.—It is not denied that abstraction of blood may be sometimes proper to aid the effect in the case stated; but it must be always conducted with caution, —and it cannot be carried to any extent with safety.

As the conditions of the disease vary materially in different subjects, the mode of preparation requires to be varied in correspondence with the condition of the disease. The means now stated, viz. abstraction of blood, fomentations and warm bathing of varied temperature, frictions of the skin with soap and brushes, gestation in the open air, wine or other cordial, are sufficient, if correctly measured and properly applied, to prepare a condition under which the affusion of cold water may be made to the surface with safety—and with a fair prospect of benefit. The proper employment of the remedy depends on the judgment of the prescriber; and the just application of it is of such importance to the accomplishment of the purpose, that the prescriber, whoever he may be, ought, if actually interested in the fate of the patient, or desirous to ascertain the real power of the remedy, to superintend and witness with his own eye every step of the process.

To the outline now given of the preparation that must sometimes be made on the patient previously to the actual affusion of the cold water on the surface, I shall add briefly— and as precisely as I can, the different steps to be observed in conducting the actual application. The subject for example, prepared in the manner that has been explained, is to be placed in a bathing tub half filled with warm wa-

Application.

er,—of a temperature varied according to the cir-umstances of the case; the skin to be thoroughly cleaned by means of soap and brushes, even to be scrubbed by the brushes so as to be rendered easily susceptible of impression. When this is effected, the body is to be raised up and placed on a stool within the bath, the cold water dashed about the head and shoulders—poured suddenly and with impulse from a bucket, or allowed to descend gently and in small quantity through a sponge, according to the circumstances of the case, or the temperature of the water employed. In vigorous subjects, in recent disease and in tropical climates or other hot countries, the affusion by means of the bucket will rarely be too much; in exhausted and delicate subjects, in advanced stages of fever and in cold climates, aspersion or affusion through the sponge will ordinarily be sufficiently impressive;—and, as less formidable in the apprehension of the timid, it is to be preferred. When the operation is finished, the subject of it is to be wiped dry, dressed in hospital clothing and laid in bed. It is not necessary to be scrupulously nice in drying the skin, where there had existed an excess of superficial heat previously to the affusion, particularly in vigorous habits and at early periods of fever; it is, on the contrary, especially important in delicate subjects at advanced periods, not only to dry the skin carefully, but, after it has been dried with linen towels, to rub it long and carefully in all parts with flannels heated at the fire,—even occasionally to rub it additionally with

CHAP. VI.

warm and stimulating oils. If it should appear, a ter the patient has been some time disposed in be that the purpose has not been perfectly attained b the first affusion, the case is to be re-considere with a view to ascertain the circumstances whic marred the effect. These having been discovere and removed by suitable processes of preparatio the affusion is to be repeated with all the addition assistances that new information may suggest.

The affusion of cold water may be made boldl and fearlessly at the commencement of the greate number of fevers, where the subject possesses th proper susceptible condition; it must be made cau tiously and with a careful consideration of circum

Cautions.

stances in the latter periods of most. Water of temperature of 40 degrees of Fahrenheit's thermo meter is, for the most part, sufficiently impressive a applied through the sponge or by aspersion; at temperature above 60, it requires to be dashed wit force and in quantity from a bucket or large vesse so as to assure the effect. Immersion in warm wa ter, affusion of warm water, friction with warm oil and affusion of cold water act powerfully and saluta rily on the animal system, as alternated with judg ment and due attention to circumstances:—suc alternations are, in fact, sometimes necessary to ove come torpor and to excite the impressible condition The affusion of cold water on the surface is impr per, ineffectual or dangerous, where congestion c inflammation exists in any of the internal organs it is safe and effectual under fluctuating and irregu

lar action, more especially as applied immediately to the organ where the irregularity exists. In this manner, its beneficial effects are often conspicuous as applied to the bare scalp in febrile delirium; either as descending from a height in a small stream, or as allowed to fall at once in quantity with force and impression. Inordinate thirst, by a somewhat analogous mode of action, is also sometimes extinguished by means of copious draughts of cold water swallowed with avidity. The thirst is extinguished; and the extinction of the fever, of which thirst was the prominent symptom, follows as a consequence of the extinguished thirst. Instances of such occurrences are numerous in medical history: one of the most striking on record occurred to Baron Trenck, while in prison at Magdeburg; and a very striking one occurred in my own person at Savanna in Georgia in the year 1779.—In further illustration of the principle here in view I may add that where pain, irritation and tenesmus constitute the leading feature of the dysenteric form of fever, the application of cold water to the lower part of the abdomen by wet cloths, or by immersion in a tub,—and even the injection of cold water into the cavity of the intestine rarely fails to give relief. The practice is not usual; but it is safe and grateful,—giving solace from pain and even contributing towards decisive and final cure. But, though the application of cold water be a safe and an effectual remedy in the circumstances stated, yet the circumstances are not always easily discriminated. The cold water could

Cold Drink.

Partial Application.

Cold Clyster.

CHAP. VI.

not for instance be supposed to be capable of producing any salutary or permanent effect, if the delirium, thirst and tenesmus, here adverted to, were connected with real congestion, or actual inflammation in the membranes or substance of the brain, in the coats of the stomach, or in the coats of the intestinal canal; but, where the symptoms in question are only contingent modes, constituting the prominent feature of the febrile action, its power is great enough to make impression; and, through that impression, not only to suspend the action temporarily, but even in some cases to arrest it permanently.

D. *Frictions.*

Besides the benefits derived from immersion in warm water or warm steam, from fomentations with flannels wrung out of hot water, or from modified forms of affusion—hot and cold; considerable effect and sometimes important benefit is derived from frictions with soap and brushes,—not only as freeing the skin from impurities, but as animating its torpid condition, and thereby restoring to it a natural or higher susceptibility of impression. But, besides the purification and animation of the skin resulting from the processes now mentioned, frictions with hot olive oil simply, or with liniments composed of olive oil, ammonia, camphire, oil of turpentine and tincture of cantharides have been employed by myself, or under my direction in different conditions of febrile disease, with evident advantage. The condi-

Frictions.

tions, in which the means stated are likely to do good, are so easily understood that it is scarcely necessary to point them out,—even to the least intelligent,—the effect so simple and direct that it requires no reasoning to illustrate it. The friction is calculated to excite and to maintain in activity the energy of the cutaneous system: it anticipates the chances of internal congestions,—it may even be supposed to aid in removing them where they already exist. It is thus powerful as preventative in the earlier stages of fever; it is valuable as auxiliary in the more advanced.

E. *Gestation in Spring Carriages or other suitable conveyance.*

The good effects of gestation are striking in various conditions of febrile disease, so decisive on many occasions in the hospital history of military campaigns, that I cannot with propriety abstain from mentioning them in this place. The limits of the work do not admit of any length of detail; I shall therefore confine myself to the bare history of the fact, offering only a very simple suggestion of the cause on which the effect may be thought to depend.

The benefits of gestation first presented themselves to my own notice in the American revolutionary war,—the first instance in my own person. The effect was rapid restoration of strength from a state of extreme debility. The experiment was re-

CHAP. VI.

Discovery.

peated on later occasions; and it was applied in the year 1780 on a large scale, viz. to about one hundred and twenty sick persons ordered to be removed from the Cheraws on the river Pedee to the head quarters of the army at Camden,—a distance of more than 70 miles. The disease was bilious remittent fever in various stages of progress. The subjects of it were placed in open waggons, exposed to a scorching sun by day, dews by night, and occasional showers of rain. They halted on the third day at Lynch's creek, which is half way between the Cheraws and Camden; and, being mustered by myself, the majority of them were well, others were convalescent, and scarcely any one remained in whom the disease had not changed from obscure remittent to distinct ague and fever.—In the year 1794, the third regiment of foot or buff, the corps through which I re-entered the army in the year 1793, sent several detachments of sick to general hospital at the earlier part of the retreat through Holland. I sometimes accompanied them to the hospital myself, and I seldom failed to observe amendment while they were on the route. In the latter part of the retreat, the whole of the sick of the Buff were carried in the rear of the Brigade; and, notwithstanding severe frost at one time, rain and fogs at another, the progress towards recovery was more rapid and more secure, when the sick were on the march than when they were stationary in quarters. In the year 1797 a corps of European soldiers, viz. the second battalion of the Irish brigade, stationed in the plain *ca-*

History.

de sac in the island of St. Domingo, was ordered to *Port au Prince* previously to its embarkation for another destination of service. The sick were ordered to be removed at the same time. They were placed in waggons: they followed in the rear and arrived at *Port au Prince* about noon:—some of them had improved in health, even to convalescence; others were not benefitted,—some perhaps were injured by the journey. Those, who were benefitted, had been bled largely at the commencement of the disease; those, who experienced no benefit, or who were injured, had been recently attacked, and no remedy, or no remedy of power had been applied before they were put into the waggons.

Chance effects.

The good effects of gestation in the cases stated were accidental effects,—the remedy, the prescription of necessity. In others, gestation was ordered as a remedy, and employed with a design and purpose in view. Where the design was formed with consideration, and the execution of it conducted with attention, the benefits were obvious—and for the most part important. Where spring waggons were at command, a certain number of sick were carried out daily for exercise—in the mornings and evenings; or, at noon,—according to the climate and season of the year; and it was often observed, under these airings, that several, who were lifted into the carriage by servants, descended from it at the interval of two or three hours without help, and walked to their apartments with comparative facility. Similar trials were made upon persons in the higher ranks of life,

CHAP. VI.

and almost uniformly with the same effect. The remedy was here ordered with a design in view; and it must consequently be supposed to have been ordered under a given condition. Whatever might be the state of exhaustion and debility, there was no hesitation in the mind of the author about the safety or propriety of employing gestation in a properly constructed carriage in simple forms of fever—endemic or infectious; on the other hand, where the disease was complicated,—manifesting signs of inflammation and abscess in the substance of internal organs, or of effusion into internal cavities, gestation was not recommended; it was, on the contrary, peremptorily interdicted.

Gestation presented.

Gestation is not useful, not even safe, in every form of action which a febrile cause assumes, not even safe or useful in every stage or condition of the same identical fever in the same subject. Slight febrile indispositions are sometimes turned off at their beginnings by gestation, or other exercise in the open air; but the beginning of fever is not the period at which the benefits here contemplated are to be expected from this form of remedy. Fever is a disease of a peculiar movement, and, left to its own course, of a defined duration: it varies according to condition of subject and quality of cause; but it exhibits, in all its forms, occasional points of rising and falling within the extremes of the circle, implying action now more languid, now more intense. The application of stimulating power is felt most sensibly at the point of remission, when

Time.

the rapidity of the febrile course abates; and, as this happens sometimes after the third day, sometimes after the fifth or seventh, the stimulation of fresh and pure air applied with impulse, in rapid succession by the progressive motion of travelling, contributes most powerfully, at this time, to bring back the customary action of health, even to confirm its stability.

On this basis—and it is a stable one, it is fair to conclude that the most proper occasion for the employment of gestation refers itself to that period of time, when the diseased movement has completed its circle, or become languid in its course, either by its own act, or by means of remedy, viz. abstraction of blood, the operation of emetics, purgatives, diaphoretics, or other powers which remove complication and bring the system to a state of equal balance. Through whatever means this may be effected, the susceptible condition being restored to a certain extent, the impulse of pure air, during the progressive motion of gestation in a wheel carriage, rarely fails to effect a salutary operation on the state of health. The same impulse makes no impression if the febrile action be strong and the course precipitous; it may even do harm, if there be organic derangement, viz. inflammation, commencing suppuration or effusion into internal parts. —The affusion of cold water on the surface is not exempt from chances of danger in certain delicate conditions of subject, during the febrile state; even aspersion sometimes requires to be made with cau-

Principle.

CHAP. VI.

and almost uniformly with the same e
medy was here ordered with a design
must consequently be supposed to
under a given condition. Wha
state of exhaustion and debili
tation in the mind of the au
propriety of employing ge
structed carriage in simi
or infectious; on the
was complicated,—
tion and abscess in
or of effusion in
not recommen
torily interdi

Gestation presented.

Gestatio of intern
form of
even s s, whether in the head
the s or intestines, no person of
feb on would pretend to recommend
t' ects are then injurious; on the contrary,

Time.

beneficial where the action is fluctuating an
lar, and where it is principally manifested o
membranes and other organs of secretion.
ground, gestation presents itself as a r
great value at the advanced periods of the
or bilious fevers of every country; but mor
ally of hot climates and hot seasons, provi
are unaccompanied by actual derangemen
structure of internal parts.

Besides the benefits derived from ges
certain forms and conditions of fever, as no

CHAP. VI.

effects of the remedy are striking where d, but where the return of healthy form of the action languid and case, more strength is often six hours in an open car- hances of uncertain wea- ned from nursing and hospitals, or conveni- space of six days. the condition of f the external estation, the greater the salutary the experiment. In this effects of the gestation alluded to, cuous upon sick persons in the act of val from infected hospitals, or other infected dwellings. The act is then in general safe; in as much as the infectious fever, in its earlier stage at least, is rarely complicated with strong degrees of internal congestion. The benefit of gestation, as the simple act of motion in pure air, is considerable in itself;— it is augmented by ablutions, by frictions and entire changes of apparel before going out and after coming in. Gestation does not produce effects so instantaneous and so strong as the affusion of cold water on the surface; but it implies less hazard in cases of extreme weakness, and it even promises more permanence of effect; in as much as the means may be continued, not only until the salutary action be moved, but until its course be con-

As forwarding recovery.

CHAP. VI.

tion: gestation, on the contrary, may be regarded as safe under the most extreme degree of debility that can well be supposed to exist,—provided there be no derangement in the structure of internal organs. This is a fact well ascertained; and, from it, I conclude that the simple character and the susceptible condition, however attained, present an opening for the trial of gestation; that the complicated character, and the unimpressible condition preclude expectations of benefit from the effects of the remedy. In this manner, gestation in the open air, in wheel carriages, promises no good in general fever with strong vascular action, or with oppressive plethora; it may even do harm by succussions and joltings, from which the structure of internal organs is in danger of being violated. Where inflammation already exists, whether in the head, heart, lungs, liver or intestines, no person of the least discretion would pretend to recommend it. Its effects are then injurious; on the contrary, they are beneficial where the action is fluctuating and irregular, and where it is principally manifested on mucous membranes and other organs of secretion. On this ground, gestation presents itself as a remedy of great value at the advanced periods of the gastric, or bilious fevers of every country; but more especially of hot climates and hot seasons, provided they are unaccompanied by actual derangement in the structure of internal parts.

Besides the benefits derived from gestation in certain forms and conditions of fever, as now descri-

bed, the good effects of the remedy are striking where disease has ceased, but where the return of healthy action is slow, the form of the action languid and imperfect; in such case, more strength is often gained by travelling for six hours in an open carriage, exposed to all the chances of uncertain weather, than would be obtained from nursing and pampering in well ventilated hospitals, or convenient private apartments during the space of six days. The greater the contrast between the condition of the sick apartment and the condition of the external air, independently of the mode of gestation, the greater is the impression and the greater the salutary effect upon the subject of the experiment. In this manner, the good effects of the gestation alluded to, are conspicuous upon sick persons in the act of removal from infected hospitals, or other infected dwellings. The act is then in general safe; in as much as the infectious fever, in its earlier stage at least, is rarely complicated with strong degrees of internal congestion. The benefit of gestation, as the simple act of motion in pure air, is considerable in itself;—it is augmented by ablutions, by frictions and entire changes of apparel before going out and after coming in. Gestation does not produce effects so instantaneous and so strong as the affusion of cold water on the surface; but it implies less hazard in cases of extreme weakness, and it even promises more permanence of effect; in as much as the means may be continued, not only until the salutary action be moved, but until its course be con-

As forwarding recovery.

CHAP. VI.

firmed; hence travelling from necessity, as occ frequently in military service, is ordinarily mo decisive of good than short airings in easy carriag undertaken at the instigation and conducted und the direction of physicians.

The good effect of gestation, in certain con tions of fever, is perfectly ascertained by referen to the medical history of military service in differe parts of the world. The more important of t conditions, in which it may be resorted to with prospect of doing good, have been cursorily notic in the preceding pages:—the cause on which t good effect depends seem to be the followin

Cause. The pressure or impulse of the common atmosphe may be considered as the direct agent which stim lates and supports animal life, which moves it in action when we first enter the world, and which r calls it when accidentally suspended at after perio If it be admitted that animal life is excited, and regular action supported by the impulse of atm pheric air, it is plain that the force of the impul is necessarily augmented by the act of progressio consequently the force of the cause is increas Hence, if there exist no extraordinary impedime to counteract the general impulse of the cause, t act of gestation in the open air is converted into direct and powerful remedy for moving and suppo ting the action of health;—and, while powerful, it of all others perhaps the most safe that can be a plied to animal organism.

The remedial means already noticed, viz. abstra

tion of blood, warm and cold bathing, frictions and gestation in the open air are means which act upon the whole series of organs in the animal system. They are thus in some measure available in all the conditions of febrile action; whether to arrest what is wrong, or to excite, support and confirm the course of that which is right.—They are general and cardinal means: the greater number of the others which remain to be noticed apply to conditions that are more or less circumscribed; or they are in themselves of inferior power only.

F. *Emetic.*

Emetics of one kind or other, have been employed occasionally for the cure of fever, from the earliest records of the medical art to the present time; and, like other remedies of power, they have had their periods of undue praise or of unjust disparagement.—In certain forms of fever, particularly in such as arise in crowded barracks, crowded transport ships, ill ventilated and crowded jails and hospitals, the exhibition of a strong emetic at an early stage of the disease often cuts short its course abruptly; the cause, if one may so speak, being dislodged in the first form of its action, and health restored as a necessary consequence of the dislodgment. On the contrary, emetics do no good; they even do harm contingently where the habit is full, the arterial action high, the pulse hard and tense, or small, deep and contracted—the skin thick and torpid; or, where the func-

Infectious Fever.

Ardent continued.

CHAP. VI.

tions of important internal organs, viz. head or liver are oppressed by sanguineous cong

Periodic.

In periodic fever, particularly in the bilious tent of the autumnal season, the emetic is o first remedy prescribed; and the effect is so cial that the disease is sometimes totally arr it; at least a condition is attained by it under is easily arrested by other application. In c fever, dysenteric fever, eruptive fever; and i In most of the fevers that manifest prominen on the skin or mucous membrane, the benefit emetic are highly conspicuous. They miti violence of symptoms; and, if they do not arrest the course of the disease, they pre way for its being more easily and more eff arrested by others. It is not, I believe, usua scribe emetics where the patient is languid, ted, or oppressed at late periods of fever: the

Languid and late Stage.

has notwithstanding been so employed by mys it was employed with advantage where febril ment was languid, or where action was oppr congestion in the mucous membrane, and oth ting organs within the abdominal cavity:—t was the same, whether the form was continu mittent. A prejudice exists with many agains of emetics in the fevers of the West-Indies; a tics, I am free to say, do no good—they even contingently in the ardent and concentrate that present themselves in that country, without preparation, particularly without tion by abstraction of blood; but, even whe

ven, they do less harm than I was at one time disposed to believe. The violent and irrestrainable vomitings which sometimes occur in the fevers of the tropical latitudes, and which are often imputed to the injudicious exhibition of emetics, arise in reality from a modified action of the cause of the disease; for I do not find, in referring to the case-books that are still preserved in the office of the Inspector of Hospitals at Barbados, that vomiting was a more common symptom, or a more formidable one where emetics were given in almost every case, —which was the practice at one time with some; and, where they were scarcely ever prescribed, which, as the same case-books shew, obtained at another time, or with other persons at the same time in other hospitals.

Mode of Exhibition.

The conditions now noticed are the more common ones under which emetics have been prescribed in febrile diseases; but I must here add that the individual circumstances of the patient and the manner in which he is treated, previously to the exhibition and during the operation of the remedy, materially influence the effect. In some cases, the abstraction of blood, even to a large extent, is indispensably necessary to assure a safe and effective operation; in others, the preparation of the stomach by tea, whey, warm water, or other beverage, in which a certain proportion, viz. fifty or sixty grains of salt of tartar or salt of wormwood, have been dissolved, is no less useful. This form of preparation cannot be well dispensed with in phlegmatic habits,

CHAP. VI.

where the tongue is foul, the saliva viscid, the mucous secretion adhesive and over abundant. Besides the dilution here recommended, previously to the exhibition of the emetic, the stomach is to be washed out at intervals, during the operation, with alkalized infusion of chamomile or warm water. Further, as the operation of emetics is most effective and the effect most salutary where the skin is warm, the patient is to be disposed in bed, the temperature of the apartment so regulated that the perspirable condition of the surface be easily preserved. As it is often seen that an emetic of severe operation arrests, or sensibly mitigates the force of the disease while a mild one has no beneficial effect; it is proper to administer emetics of severe operation in the stronger forms of fever and to encourage the vomiting, until the secretions which are influenced by its action be evidently changed, the existing action of the disease brought to arrest—by faintness or other contingence.

Besides difference of effect, arising from the different manner of managing the patient during the operation of the emetic, difference also arises from the different nature of the substance by which the effect is produced. Ipecacuanha is the most common substance employed for this purpose; and it is perhaps upon the whole the mildest of those that can be considered as effective. It acts directly on the mucous membrane; and, where the force of the disease is principally exerted on the surface of that membrane, it is the best and safest of the emetic

Ipecacuanha.

class. Where the functions of the principal organs in the abdominal cavity, particularly the functions of the liver, are sluggishly and imperfectly performed, tartarized antimony is to be preferred. It acts with more severity and for longer continuance; and it thus has more power in subverting actions that are diseased,—perhaps of stimulating actions that are languid. It acts on some occasions so as to arrest the total course of continued fever: it may be so timed in exhibition, and so directed under operation as to prevent the recurrence of the paroxysm of the intermittent—not unfrequently to prevent relapse whether of the intermittent or other form. Zinc or white vitriol operates speedily as an emetic, —and it operates safely. It acts powerfully upon the secretions of the mucous membrane; and, as such, it acts beneficially in *catarrhal* and *pituitous pneumonia*,—the collected pituita being not only dislodged, but the secretion moderated—even suspended for a time by its operation.

Tartarized Antimony.

Zinc.

The ejection of offensive matter from the cavity of the stomach; and, on some occasions, from organs of secretion that are nearly connected with it, presents itself as the direct effect of emetic. The effect is ostensible; but we are not therefore to consider the act of expulsion as the act upon which the benefits of the remedy radically depend. The surface of the membrane to which the emetic drug is applied, excited into action by peculiar stimulus, experiences violent commotion in its structure, even subversion of actions which exist at the time whe-

Principle.

CHAP. VI.

ther it be natural or diseased. The influence extends to contiguous membranes and even to parts that are remote; and, in this manner, the biliary secretion and even more distant secretions, especially those of the cutaneous system, experience commotion and change in their condition under the operation of strong emetics,—a change which contingently involves a permanent change in the condition of the general health of the whole system. The emetic thus becomes a remedy of great power, as given in the suitable condition and aided, during the operation, by every necessary accessory capable of improving its effect. A glass of brandy, a glass of spiced wine, a draught, composed of laudanum, antimonial wine, æther, or aromatic and spirituous tincture, given after the emetic operation ceases, frequently does good, by stimulating to a new action analogous with that of health, and, even by contributing, in some degree, to maintain the salutary action after it is restored to its course.

G. *Purgative.*

Purgative remedies occupy a prominent place in the catalogue of means employed for the cure of fever, both in ancient and modern times; but they have not been, and are not even now always employed in the same manner, and with the same curative view in analogous cases of similar diseases by different persons. There are some who interdict every purgative during the first days of the

febrile course; there are others, who employ even the harsher forms from the very commencement; and who, repeating them at short intervals, carry alvine evacuation to excess. The first class wait, according to their theory, for a certain preparation of the offending matter termed coction; and there is reason to believe that, when such preparation is effected, the exhibition of the purgative often contributes to render the crisis complete, at least more decisive than it otherwise would be. The second aim at diminishing the violence of the disease in all its stages,—and they attain their purpose to a certain extent. Rule.

It is evident to common sense that, where the force of the fever is principally exerted on the secreting surfaces of the alimentary canal, or on the function of organs in the abdominal cavity intimately connected with it, the action of strong purgatives necessarily makes impression on the whole series of connexion, and not unfrequently produces favourable change on the character of the disease, directly or indirectly. If the purgative carry off offending matter, it palpably diminishes a cause of annoyance; and, if by stimulating to a new train of action, it arrest the action of the disease in the part so stimulated, it may be supposed to effect, or to contribute towards the effecting of a cure—partial or general, temporary or permanent as the case may be. If the febrile action be general, or if it be complicated with sanguineous congestion in any of the organs within the abdominal cavity; or, with what Condition of Disease.

CHAP. VI.

is termed inflammatory action in the peritoneal coat of the intestines: in short, if there be sanguineous congestion, or active inflammation in any part or organ within the circumference of the body, the exhibition of purgatives, simply as purgatives, promises no material good; on the contrary, the purgative act is frequently injurious. In a plethoric state of the vascular system, more expressly in the higher degrees of the ardent fevers of the West-Indies, the action of purgative remedies has appeared to myself to be equivocal,—hurtful rather than useful. The strongest have no purgative operation in many cases; or, if they have, the mode is irregular and by starts,—the evacuation watery—unaccompanied by relief. In the bilious remittent of the milder form, the good effects are obvious: they are equivocal in concentrated forms—with a dry, constricted and withered state of the skin. The emetic, as observed above, cuts short the course of fever by its own power on some occasions: the purgative diminishes the violence of symptoms and renders the course comparatively regular; but it has very little credit, according to my own experience for accomplishing absolute cure.

Such, as has been stated, is the result of the operation of the simple purgative on the more common forms of febrile disease as it first presents itself. The condition is changed by preparation; and the effect of the purgative is thereby rendered more sure and effectual than it otherwise would be. Of the various means employed to prepare the febrile sub-

ject for the exhibition of purgatives, the abstraction of blood may be considered as the principal. It restores general susceptibility by removing general or local congestions and constrictions; and it thus renews activity of function among the organs of secretion. Besides abstraction of blood, which acts as now stated, a warm or rather a high temperature of the sick apartment, fomentations of the extremities, frictions of the skin with warm oils—and even the warm bath may be regarded as means which forward the favourable operation of remedies of this class. Dilution with alkalized beverage previous to exhibition, and during the time the remedy continues to act, more especially where the first passages abound with viscid and tenacious phlegm, contributes very materially to aid the good effect.

Preparation.

The simple purgative, whether salts, jalap, rhubarb, aloes, colocynth, senna or magnesia, can scarcely be supposed to extend its operation beyond the limits and direct connections of the alimentary canal; it cannot therefore be supposed to act materially on the course of a disease which extends to and acts in every part of the system. The simple purgative is thus limited as a remedy,—temporizing and palliative. The sphere of operation is extended, the force augmented, and effect rendered decisive by combination with other means. Of compound forms, five or six grains of calomel, followed at an interval of some hours by divided doses of dilute solution of epsom salts and tartarized antimony, may be considered as one of the best in

Compound Forms.

CHAP. VI.

bilious remittents, particularly in hot countries. It is a common form—and it is upon the whole a good one; but jalap—with calomel, is more frequently employed by military practitioners; and it has superior advantages in many cases, particularly as combined with James' powder. Infusion of senna, with a certain proportion of kali, is well adapted to the pituitous condition; and if a portion of antimonial wine, aqua ammoniæ acetata, occasionally æther or other aromatic and volatile tincture be added to it, the evacuations are often feculent—rendered without irritation—and they bring relief. Calomel, with extract of colocynth, &c. made into pills for the sake of administration, appears frequently among the purgative forms of medical officers of the army,—and it is upon the whole a good one. Two ounces of aloes and one of myrrh—the myrrh dissolved by rectified spirits of wine, a pint of the best French brandy being super-added, forms a purging tincture of peculiar excellence in some forms of disease,—two drachms more or less for a dose. It rarely operates in less than twelve or fourteen hours after it has been given; but, when it does operate, it produces evacuations more feculent and effective than any other form with which I am acquainted. The operation is accelerated by the addition of a tea spoonful of æther; and the addition of one ounce of oil of turpentine often gives it great power. Where the bowels are torpid and the hypochondria inflated, as happens not unfrequently in the late stages of fevers of the gastric

class, its good effects are eminent. It is retained on the stomach where purgatives of a less offensive taste are rejected; and, while purgative, it seems to stimulate the whole alimentary system to the proper exercise of its function.—Every purpose, that can be attained by means of purgatives, may be attained by one or other of the forms now noticed.

H. *Diaphoretic.*

Diaphoresis usually attends and apparently contributes to the purpose of effecting a favourable termination of fever; and as the means employed for that end are various, and some of them not altogether harmless when misapplied, I shall briefly notice the leading conditions which define their use, that is, promote or mar the success and safety of the effect. There are two views, by which the application of the means intended to excite perspiration, are to be directed, viz. removal of artificial constriction from the organ of secretion by subtraction of blood, aided by fomentations of the surface with warmth and moisture; or, direct stimulation by heating internal remedies and heated external air, intended to overcome resistance by something like direct force. The first is the safest—and it is the most effectual. It is even often indispensable as precursor of the other, where the other is ultimately in view; for, where the skin is constricted, thick—and as it were compacted, heating internal remedies, though they accelerate the circulation, rarely overcome the stric-

Means.

CHAP. VI.

ture of the surface, so as to establish a free and copious perspiration throughout. Abstraction of blood, immersion of the body in warm water, fomentations with flannels wrung out of hot water, succeeded by the sudden affusion of cold water on the surface, constitute the principal of the first class of diaphoretics. Various internal remedies are employed in this view also—some of them more, some of them less directly stimulant. Of these, James' powder, compound powder of ipecacuanha, aqua ammoniæ acetata, and a compound of nitre, tartarized antimony, camphire and opium are the most common—the safest and the most effectual.—The above apply to cases where there is more or less of constriction, dryness and heat; where there is dampness,—with a thick and greasy state of the surface without actual diaphoresis, snake-root, contraerva, ammonia, salt of amber and ablutions with salt water, salt and vinegar, &c. may be employed with safety—and they are often employed with success. Among the means of establishing and maintaining diaphoresis, the adjustment of the air of the apartment is a matter of importance,—it ought to be pure and of rather a high temperature.

Conditions.

As the force and dangers of fever are often diminished by purgatives, given at short intervals during the course of the disease; so their violence is moderated and the course conducted to a favourable issue, in a somewhat similar manner, by means which maintain an equal and gentle perspiration throughout,—such for instance as remove resistances—not such as extort sweat by excess of stimulation, whe-

ther drugs, or wine and ardent spirit: the effect of these, instead of being salutary, is often hurtful—even destructive.

I. *Mercury.*

Mercury has been employed, and confided in as a remedy of principal dependence for the cure of certain forms of febrile disease, viz. the hepatic and dysenteric, for many years past—more particularly in the East-Indies than in other countries. Calomel, simply or combined with jalap, has also been long employed by the medical officers of the British army, and even by ordinary practitioners in the West-Indies and North-America, as a convenient and effective form of purgative at the commencement of fevers, more especially fevers of the periodic class. These practices are of old date, and do not require to be discussed on the present occasion. The practice, now to be considered, is comparatively new; and the management of it is directed by what may be held to be a new principle in medical theory, viz. the excitement of artificial salivation to arrest the existing course of a fever. Dr. Colin Chisholm, of the medical department of the Ordnance, may be considered as the author of the practice. He brought it to experiment in a malignant and fatal form of disease, which appeared in the island of Grenada in the year 1793. If we allow ourselves to estimate the value of the remedy by the success of the effect, as exemplified in

CHAP. VI.

the Ordnance hospital at Grenada, we cannot rate it high; yet, notwithstanding the negative testimony on this occasion, the exhibition of mercury internally, and the application of it externally by friction with a view to induce salivation dates from this origin; and, in spite of failures, it has extended further and maintained itself longer among practitioners in the West-Indies, both in the army and in the civil community, than almost any other known remedy. It therefore becomes necessary to examine the subject without prepossession, and to state the result candidly for the information of those who desire to know the truth.

Numerous experiments, of what is termed the mercurial plan of treating fevers, have been made by the medical officers of the army since the year 1793; and, though none have been made professedly by myself, the steps of the process and its results have often fallen under my observation in the course of my official duty as Inspector of hospitals. From a candid review of the whole, I think I am warranted to confide in the following conclusions, viz. 1. That where the disease is of the intermitting or remitting type, the intermissions or remissions distinct, the skin soft, thin, warm and perspirable, the pulse free and expansive,—in short, where the symptoms are of a secondary degree of violence, the salivary glands are for the most part soon affected by mercury, whether given internally or applied externally by friction; and further that where the glands are affected and a free and copious

Slight or Periodic Form.

salivation established, the disease ordinarily abates in force—and even sometimes ceases altogether. The rule is general,—not absolute; for instances occur—and not unfrequently where the paroxysm returns after salivation is fully established;—even some are recorded where death has not been averted, though the reputed sign of safety was present.

Concentrated.

2. Where fever is of the continued kind—whether endemic simply, epidemic or infectious, the symptoms violent, the heat ardent, the skin thick and compacted, dry and torpid, as connected with excessive excitement and precipitate action; or, thick, greasy, damp and inanimated, as connected with constriction and diminished energy of the capillary system, calomel may be given internally to great extent, and mercurial ointment may be rubbed upon the surface in great quantity, without the salivary glands being in any degree affected by it. The case is common; but in other cases, the gums become spongy and livid, the breath emits the mercurial fœtor,—but no salivation takes place, and no change is effected on the course of the disease; which proceeds steadily to its natural termination—frequently a fatal one; or, if signs of recovery manifest themselves, the progress of the recovery is slow:—sometimes an increased discharge of saliva supervenes in the course of it, which, by its excess, brings life into danger.

The conditions now described are extremes; they comprehend what is most important, relative to the effect of mercury as a remedy for the cure of recent

CHAP. VI.

Slow Fevers.

fever. In fevers of a slow course and protracted duration; and more particularly in fevers complicated with congestions in the more important organs within the abdominal cavity, the internal exhibition of mercury and the external application of it, carried to the extent of producing more or less of ptyalism, has appeared to myself to be a remedy of value; in fact often the only remedy, especially as aided by medicated diets, by bathings, frictions and the exercise of gestation, on which any dependence can be placed for effecting cure, or even for prolonging life. Mercury, in one form or other, aided by medicated diets, baths and frictions, is frequently employed in certain protracted forms of dysenteric malady,—and its benefits, where it is properly managed, are important and well proved. Calomel,

Dysenteric.

with opium, and sometimes with the addition of ipecacuanha, has, in a manner, superseded all other forms of remedy for the cure of recent dysentery with some practitioners in British military hospitals. In these, I have seen it employed on a large scale, and so exclusively of other means that I consider myself as entitled to speak with confidence of its effects. 1. Where the cause of the disease appeared to act principally on the mucous membrane of the intestines; and, where the action was only of second-rate violence, ptyalism or salivation was, for the most part, soon induced by calomel combined with opium. Where salivation was induced, the violence of the disease ordinarily abated;—and, in a few days, the disease actually ceased, sometimes

permanently; sometimes only temporarily, the symptoms recurring at a short interval after the ptyalism disappeared. 2. Where the action of the cause of the disease extended to all the coats of the intestines, particularly to the peritonæal, the benefits of the mercurial treatment, simply as mercurial, were very equivocal. It rarely in fact made any impression: the disease proceeded uninterruptedly to a fatal termination; or, it terminated by congestions in the mesentery and coats of the intestines themselves so as to leave the patient valetudinary—sometimes for life.

The above is the sum of what I have to remark respecting mercury, as employed in different forms of recent fever and recent dysentery, without a previous preparation of the subject by art. The preparation of the subject, particularly as effected by abstraction of blood in the more concentrated fevers and more complicated forms of dysentery, is indispensable to the success of the primary effect; that is, to assure the action of the remedy on the salivary glands. The quantity of a thousand grains of calomel has often been given internally, ounces of ointment being rubbed at the same time upon the body externally, without producing the smallest increase of salivary secretion. In such case, the disease ran on to a fatal termination as if nothing had been done: in others, perfectly analogous, the abstraction of two, three, four or more pounds of blood changed the condition, in such manner that a moderate quantity of calomel acted immediately and effectively on the salivary glands; hence, the saliva

Preparation.

CHAP. VI.

flowing freely, the fever, whether general or dysenteric, usually abated—and often finally ceased. I leave it to the reader to form his own opinion, whether the effect belonged to the mercury or to the bleeding. It has been the custom of late, with some of those medical officers of the army who are prepossessed in favour of the mercurial plan of treating fevers, to give calomel in doses of a drachm or half a drachm after the subtraction of a large quantity of blood, viz. three, four, or even five pounds according to the intensity of the symptoms. The salivary secretion is soon moved by this form of proceeding: the disease is overcome, and the mercury obtains credit for what, according to another—and perhaps a truer view of the case, is actually owing to the abstraction of blood. If mercury be applied externally, or given internally without previous preparation by abstraction of blood or other suitable means, the salivary discharge rarely begins to flow before the third, fifth or seventh day of the disease, —generally not until after one or other of the more remarkable critical periods of fever. The knowledge of this fact, obtained through observation of the progress of diseases—and confirmed by reference to case-books still preserved in the office of Inspector of hospitals at Barbados, warrants the conclusion that mercurial action, as manifested by salivation, is an indication of the suspension or cessation of febrile action effected by art or nature, rather than the cause of the actual suspension or cessation—in counteraction of the power of the existing disease.

The conclusion is important—and I consider it as established.

Effects comparative.

Upon the whole, I venture to maintain that if the results of what is termed mercurial treatment in fever and even in dysentery, particularly in British military hospitals where it has been most extensively employed, be candidly reviewed; the high, or rather the extravagant opinion which has been, and which is even now entertained of the salutary powers of that remedy, is not well supported. The advocates of mercurial treatment generally assert that no one dies from fever after salivation is fully established. The assertion is not altogether correct; but even if it were, and if it appear, in a reference to hospital case-books, that there is one in three of the more concentrated forms of endemic fever in which calomel, given alone or in combination with opium to the amount of a thousand grains or more, produces no increase of the salivary secretion; consequently does not produce the effect which controls the fatal tendency of the disease: and further, if it appear, through the same channel of information that the same disease, when left to its own course or opposed by ordinary means of treatment, does not destroy life in more than one case in three, the most prepossessed in favour of the remedy will not maintain that we gain any thing by the experiment; —and it is evident that, if we gain nothing certain, we lose time and chances of gain from other means. But though the effect of mercury, even where it does produce an increased discharge of the salivary se-

CHAP VI

cretion, is not uniformly decisive of the cure of fever; and though the action of the remedy—without artificial preparation by bleeding or other means not implied in the plan of mercurial treatment, be extremely uncertain, the practice still holds its ground, —and it probably will maintain it for many years to come: it hangs on a specious delusion, viz. the expectation of an effect considered as in some measure specific of cure. I abstain from further remark on the subject,—only adding that, if the case be viewed without prepossession, and if the hospital returns of the person who first adopted the practice at Grenada in the year 1793, and of those, who have pursued a similar practice in the different military hospitals in the West-Indies since that time, be admitted as documents of effect, the arguments for the continuance of it do not appear to be strong.

The remedies, the mode of operation and effects of which I have adverted to in the preceding pages, are calculated to arrest the febrile course abruptly, or to moderate its violence and diminish the danger of its action. The most of them are depletory, either of blood or secreted humours; consequently the effect is visible in the functions and offices of organic structures. Besides the depletory, which are employed principally with a view to arrest or change the existing morbid action, there is another class employed to prevent recurrence after the action has been arrested artificially, or ceased temporarily of its own accord;—and further, calculated to excite the activity and confirm the stability of the

healthy action after it is reproduced.—These are usually termed tonic.

K. *Peruvian Bark.*

Peruvian bark stands at the head of the list of tonics. It is an important and a powerful one; but, before an opinion can be given concerning the mode of operation through which it prevents the recurrence of the paroxysms of periodic fevers, it will be proper to ascertain, by unprejudiced observation, what are the precise conditions of habit which favour or oppose the effect expected from it.

Favourable Condition.

1. Bark, when of good quality and given to sufficient quantity, rarely fails to prevent the recurrence of the paroxysm; that is, to arrest the course of the disease where the paroxysm terminates by copious, fluid and warm perspiration, where the skin is soft, warm, sensible and animated, the pulse soft, free, expansive and more frequent than natural, where no marks of constriction or congestion are perceivable in the organs of secretion,—and where sensibility is preternaturally increased throughout the whole system.

Unfavourable Condition.

2. Bark, of the best quality, is often given without preventing the recurrence of paroxysms where the paroxysm, instead of terminating completely by copious, fluid sweat or other evacuation, subsides silently and imperfectly by partial clammy perspirations; where the pulse, during the period of subsidence or intermission, is hard and tense, or deep and concentrated, small and irritated,

CHAP. VI.

obscure, creeping and oppressed; where the skin is dry, constricted, torpid, thick and compacted; where the bowels are torpid—little obedient to the action of purgatives—the urinary secretion irregular, and other secretions more or less impeded; where there are marks of general plethora or stagnation in the venous system—known by a dark or scurvied colour of the skin; where there are marks of congestion—sanguineous or phlegmatic in the substance of important organs, viz. liver, lungs, head or spleen; and finally, where the function of the sentient system is unusually disordered, its susceptibility suppressed generally, or its irritability increased and irregularly balanced, as expressed by fretfulness, restlessness and other forms of distress. Bark ordinarily fails in preventing the recurrence of the febrile paroxysm in the condition now described; and, it was probably in conditions somewhat similar to the one noticed, that the failures were so numerous in the fever which prevailed among the British troops at the seige of Flushing, and during the occupation of the island of Walcheren in the year 1809. It fails frequently, perhaps generally in the more concentrated of the periodic fevers of the West-Indies as given without preparation, or with no other preparation than that which follows an emetic or purgative.

Condition produced by Preparation.

But while I admit this—and I have seen it often proved, I can also say, from ample experience, that the effect may be rendered sure by previous preparation and proper combination during exhibition;

CHAP. VI. Remittent.

in so much as not to fail once in a hundred times in cases of the genuinely intermittent type:—it is not to be depended on for the precipitate arrest of the remittent, either in the West-Indies or in other countries. The remittent appears to proceed in a defined course to a given critical termination, in spite of the largest quantities of bark that are given to prevent it. I formed this opinion on the subject from what I observed of the fevers of Jamaica between the years 1774 and 1778; and I find the truth of it confirmed by reference to case books which are still in existence in the Inspector's office at Barbados. The cases, in the books referred to, were taken down and recorded without any view to the question here implied. I analyzed them, and found that the terminations were generally on critical days,—the progress of the disease not arrested artificially by treatment.

I have stated the fact historically, as it has appeared to myself through a long course of experience; and as it is evident, from the history given, that there are various conditions in the animal system, when under the action of a febrile cause, which counteract the power, or render void the impression by which the peruvian bark prevents the recurrence of the febrile paroxysm, it may be thought necessary that I explain what these opposing conditions are, and that I notice the means by which they may be best and most easily removed. I. No reliance can be placed on the action of peruvian bark as a remedy against the recurrence of the paroxysms of

CHAP. VI.

the intermittent, where venous plethora, general or local, exists to any extent in the system; where the foundations of congestion, or changed structure already exist in any of the important internal organs; where animal sensibility is impaired—suppressed generally, or irregularly balanced in the different series of parts; where the skin is constricted and close—or damp, greasy and torpid;—in short, where ever susceptibility of impression is diminished or obscured, whether through open or latent action, the operation of bark is uncertain—rarely salutary.

2. Bark, on the contrary, rarely fails to do good, even to arrest the disease, where sanguineous plethora and other congestions are removed from every part of the system, where circulation is free and equally balanced throughout, animation equally diffused to all parts of the surface, susceptibility of impression above the natural degree, whether produced by inanition from abstinence under the continuance of the disease, or by artificial depletion. It being thus evident that conditions are different as the case presents itself, it necessarily becomes the first step in the physician's course to bring the differing conditions to a standard level by artificial preparation, previously to the exhibition of the remedy.

Preparation.

The means to be employed for that purpose are similar to those employed for the affusion of cold water on the surface, viz. abstraction of blood to greater or lesser extent; emetics, more particularly antimonial emetics; purgatives, particularly those that operate actively and extensively; diaphoretic and

attenuants; tepid baths, and, on some occasions, the application of blisters to the neck and spine.

Mode of Exhibition.

Where the condition suitable for the exhibition of bark is present, whether existing naturally, or prepared artificially; it is proper that the remedy, either simply, or in combination with such other aids as increase its power, be given in cases of intermittent to the quantity of two drachms at a time —every other hour. The quantity may be increased to half an ounce or more, where life is threatened with danger if the recurrence of the paroxysm be not prevented. On the contrary, doses of two scruples, or of one drachm at most, at the interval of three hours, are more suitable in the remittent. —The quantity stated has appeared to myself to be sufficient to guard the habit against untoward changes; and no quantity appeared to me to be sufficient to arrest the course of the disease by force.

Base on which it acts.

The effect of peruvian bark, in preventing the recurrence of febrile paroxysms, having been stated historically, and the conditions of habit, under which the effect is attainable, having been noticed cursorily, it may perhaps be expected that some opinion be given, or some conjecture offered concerning the identical mode of action through which the effect is attained. As the course of the disease is arrested by the exhibition of bark without the production of any visible operation; at least without the occurrence of any sensible evacuation from organs of secretion, it is reasonable to suppose that the remedy acts on the solid fibre, changing its

CHAP. VI.

condition,—and, by some inexplicable operation of tonic power, diminishing its irritability—in such manner that the periodic recurrence of the febrile cause fails to excite the periodic febrile irritation. Where the disease is without complication, the more relaxed the habit and the greater the general mobility of the locomotive power, the more certain is the repressive effect of the remedy. If this be so,—and it is proved by history, it is fair to conclude that bark conveys to the fibre some imperceptible condition, whereby the impression of contingent stimulations,—and, among these, the stimulation of the cause of periodic fever is resisted. Bark gives firmness and elasticity to the muscular fibre, force and energy to the locomotive power, imparting to the habit a species of vigour and activity, not unlike that which is derived from exercise in open and pure air.—Bark is upon the whole a safe remedy. It is admitted that it does not arrest the disease; or, that it arrests it only temporarily and imperfectly, if the condition under which it is given be not the proper one; but, in a long course of experience, and with numerous opportunities of seeing it fail of doing what was expected from it, I have seen very few instances of its actually doing harm, where the matter was sifted to the bottom and the real act of the remedy fairly ascertained.

There are other remedies besides peruvian bark, which have been employed occasionally for the purpose of preventing the recurrence of the paroxysms of intermittent fevers; and, of late years, a solution

Arsenic.

skin with soap and brushes, aid materially in effecting the purpose of preparation here in view; but they are feeble and imperfect as unaccompanied by subtraction of blood. In other forms of fever, where signs of internal congestion are prominent, and where they are accompanied with a cold and torpid state of the skin, a deep seated, sluggish and oppressed pulse; immersion in a bath of high temperature and frictions with soap and brushes take precedence of the abstraction of blood, but do not supersede the necessity of it. If the febrile action be accompanied with tremors, startings, disposition to faint, inability to rise up from muscular weakness, delirium—without marks of congestion in the brain, a frequent, soft and weak pulse, soft and inelastic state of the skin, general mobility or increased sensibility to all forms of impression; the preparation for the affusion of cold water to the surface, instead of being made by abstraction, is to be made through warm or tepid baths regulated by the feeling of what is agreeable,—frictions with stimulating oils, exposure to cool and refreshing air; and, if it can be attained, gestation in the open air in spring or other carriages,—to which may be added wine or or other suitable internal cordial. When the state of things has been changed by these and other similar processes, so as not only to be easily susceptible of impression, but to be effective of re-action when impressed, the affusion or aspersion with cold water, more particularly with cold salt water, may be made with confidence of benefit,—at least without dread

CHAP. VI

of injury.—It is not denied that abstraction of blood may be sometimes proper to aid the effect in the case stated; but it must be always conducted with caution, —and it cannot be carried to any extent with safety.

As the conditions of the disease vary materially in different subjects, the mode of preparation requires to be varied in correspondence with the condition of the disease. The means now stated, viz. abstraction of blood, fomentations and warm bathing of varied temperature, frictions of the skin with soap and brushes, gestation in the open air, wine or other cordial, are sufficient, if correctly measured and properly applied, to prepare a condition under which the affusion of cold water may be made to the surface with safety—and with a fair prospect of benefit. The proper employment of the remedy depends on the judgment of the prescriber; and the just application of it is of such importance to the accomplishment of the purpose, that the prescriber, whoever he may be, ought, if actually interested in the fate of the patient, or desirous to ascertain the real power of the remedy, to superintend and witness with his own eye every step of the process.

To the outline now given of the preparation that must sometimes be made on the patient previously to the actual affusion of the cold water on the surface, I shall add briefly— and as precisely as I can, the different steps to be observed in conducting the actual application. The subject for example, prepared in the manner that has been explained, is to be placed in a bathing tub half filled with warm wa-

Application.

ter,—of a temperature varied according to the circumstances of the case; the skin to be thoroughly cleaned by means of soap and brushes, even to be scrubbed by the brushes so as to be rendered easily susceptible of impression. When this is effected, the body is to be raised up and placed on a stool within the bath, the cold water dashed about the head and shoulders—poured suddenly and with impulse from a bucket, or allowed to descend gently and in small quantity through a sponge, according to the circumstances of the case, or the temperature of the water employed. In vigorous subjects, in recent disease and in tropical climates or other hot countries, the affusion by means of the bucket will rarely be too much; in exhausted and delicate subjects, in advanced stages of fever and in cold climates, aspersion or affusion through the sponge will ordinarily be sufficiently impressive;—and, as less formidable in the apprehension of the timid, it is to be preferred. When the operation is finished, the subject of it is to be wiped dry, dressed in hospital clothing and laid in bed. It is not necessary to be scrupulously nice in drying the skin, where there had existed an excess of superficial heat previously to the affusion, particularly in vigorous habits and at early periods of fever; it is, on the contrary, especially important in delicate subjects at advanced periods, not only to dry the skin carefully, but, after it has been dried with linen towels, to rub it long and carefully in all parts with flannels heated at the fire,—even occasionally to rub it additionally with

CHAP. VI.

cordials are, or may be employed with benefit as auxiliary in the cure of many forms of fever; they are scarcely to be considered as sole or principal in any. I am ready to admit that it is only by stimulations that we arrest the course of fevers. It is by a succession of stimulations also that animal life is supported in a state of efficiency; but wine and brandy and similar ingesta, though often grateful to the taste and correspondent with the prejudices of the patient, are not the most effective of the purpose;—they are at the highest estimate auxiliary only.

We have no just ground to proceed upon for the institution of an artificial preparation which renders the effects of wine or other cordial decisive of cure; for, though wine acts favourably where the animal power is depressed, or its activity dormant, there is no good reason to expect that an absolute arrest of the disease will follow from a high dose of the remedy—not even from intoxication. This however I am aware has sometimes occurred—but not often: if it does occur, it is a contingence which cannot be calculated and on the chances of which no discreet physician would venture to act; the rule, therefore, which must guide in the employment of wine as a remedy in fever, is a rule of experiment only.

In continued fevers in phlegmatic constitutions, wine, or, where wine is not sufficiently powerful to make impression, brandy, given at measured intervals for some time preceding the critical or dangerous period, is often a remedy of value. It is to be given in such quantity, and in such quantity only

lar action, more especially as applied immediately to the organ where the irregularity exists. In this manner, its beneficial effects are often conspicuous as applied to the bare scalp in febrile delirium; either as descending from a height in a small stream, or as allowed to fall at once in quantity with force and impression. Inordinate thirst, by a somewhat analogous mode of action, is also sometimes extinguished by means of copious draughts of cold water swallowed with avidity. The thirst is extinguished; and the extinction of the fever, of which thirst was the prominent symptom, follows as a consequence of the extinguished thirst. Instances of such occurrences are numerous in medical history: one of the most striking on record occurred to Baron Trenck, while in prison at Magdeburg; and a very striking one occurred in my own person at Savanna in Georgia in the year 1779.—In further illustration of the principle here in view I may add that where pain, irritation and tenesmus constitute the leading feature of the dysenteric form of fever, the application of cold water to the lower part of the abdomen by wet cloths, or by immersion in a tub,—and even the injection of cold water into the cavity of the intestine rarely fails to give relief. The practice is not usual; but it is safe and grateful,—giving solace from pain and even contributing towards decisive and final cure. But, though the application of cold water be a safe and an effectual remedy in the circumstances stated, yet the circumstances are not always easily discriminated. The cold water could

CHAP. VI.

Cold Drink.

Partial Application.

Cold Clyster.

CHAP. VI.

sion in continued fevers, and more especially as employed to anticipate the depressive tendencies of paroxysms in the treacherous periodic; but it is a remedy, within the command of the rich only.

Official Drugs.

Ammonia, æther, salt or acid of amber, are among the more powerful of officinal stimulants. Their effects are of short duration; and they are only available by those who narrowly watch, or in a manner nurse the sick: employed with judgment, they contribute with other means to rescue the patient who is in a desperate condition from the hands of death; but they are not general remedies.

M. *Opium.*

Indiscriminate Use.

Opium is another of the remedies frequently employed for the cure of fever. Its credit was so high a few years since, with a certain class of practitioners in Great Britain, as in a manner to supersede every other curative means, except wine. The experiments, made with opium and wine, were made on a very extensive scale in British military hospitals at the earlier periods of the war 1793; but the results cannot be said to have been fortunate; for while the sickness, both at home and abroad, was ordinarily high in proportion to the number of the troops, the mortality was great in proportion to the number of the sick. Opium was considered at that time as the sovereign remedy in typhus fever; and the fevers, which appeared among the troops at that period, were generally designated by

tions, in which the means stated are likely to do good, are so easily understood that it is scarcely necessary to point them out,—even to the least intelligent,—the effect so simple and direct that it requires no reasoning to illustrate it. The friction is calculated to excite and to maintain in activity the energy of the cutaneous system: it anticipates the chances of internal congestions,—it may even be supposed to aid in removing them where they already exist. It is thus powerful as preventative in the earlier stages of fever; it is valuable as auxiliary in the more advanced.

E. *Gestation in Spring Carriages or other suitable conveyance.*

The good effects of gestation are striking in various conditions of febrile disease, so decisive on many occasions in the hospital history of military campaigns, that I cannot with propriety abstain from mentioning them in this place. The limits of the work do not admit of any length of detail; I shall therefore confine myself to the bare history of the fact, offering only a very simple suggestion of the cause on which the effect may be thought to depend.

The benefits of gestation first presented themselves to my own notice in the American revolutionary war,—the first instance in my own person. The effect was rapid restoration of strength from a state of extreme debility. The experiment was re-

CHAP. VI.

principally and directly on sensation, supplants that action by engrafting its own; hence, it is observed that violent febrile delirium and violent muscular agitations, especially in paroxysms of fevers of the periodic class, are often restrained, even perfectly overcome by a large dose, viz. a hundred drops or more of the tincture of opium. The quantity required to produce the effect corresponds with the violence of the irritation existing at the time; that is, the force of the diseased action requiring arrest or controul. In this manner, one hundred and fifty drops of tincture of opium may be given in a plethoric state of the system with strong irritative action, pains and spasms—without producing any material effect: five and twenty, or thirty may be regarded as a full dose, where the habit is rendered susceptible by artificial evacuation or inanition; fifty or sixty may then be dangerous.

Quantity.

Mode of Exhibition.

Opium is a remedy of power, and the exhibition of it in practice, according to my own opinion, is to be regulated by similar considerations as those which regulate the exhibition of wine, or strong liquor, viz. given in quantity to effect its own impression at the dangerous periods of the disease, particularly previously to the expected return of the paroxysms of fever of malignant or treacherous character; especially such as are accompanied with unusual despondence and depression of mind, or as manifest a disposition to spasm, convulsion or other mode of irritation. As the effects of opium, like the effects of other remedies, correspond with the

de sac in the island of St. Domingo, was ordered to *Port au Prince* previously to its embarkation for another destination of service. The sick were ordered to be removed at the same time. They were placed in waggons: they followed in the rear and arrived at *Port au Prince* about noon:—some of them had improved in health, even to convalescence; others were not benefitted,—some perhaps were injured by the journey. Those, who were benefitted, had been bled largely at the commencement of the disease; those, who experienced no benefit, or who were injured, had been recently attacked, and no remedy, or no remedy of power had been applied before they were put into the waggons.

Chance effects.

The good effects of gestation in the cases stated were accidental effects,—the remedy, the prescription of necessity. In others, gestation was ordered as a remedy, and employed with a design and purpose in view. Where the design was formed with consideration, and the execution of it conducted with attention, the benefits were obvious—and for the most part important. Where spring waggons were at command, a certain number of sick were carried out daily for exercise—in the mornings and evenings; or, at noon,—according to the climate and season of the year; and it was often observed, under these airings, that several, who were lifted into the carriage by servants, descended from it at the interval of two or three hours without help, and walked to their apartments with comparative facility. Similar trials were made upon persons in the higher ranks of life,

CHAP. VI.

and almost uniformly with the same effect. The remedy was here ordered with a design in view; and it must consequently be supposed to have been ordered under a given condition. Whatever might be the state of exhaustion and debility, there was no hesitation in the mind of the author about the safety or propriety of employing gestation in a properly constructed carriage in simple forms of fever—endemic or infectious; on the other hand, where the disease was complicated,—manifesting signs of inflammation and abscess in the substance of internal organs, or of effusion into internal cavities, gestation was not recommended; it was, on the contrary, peremptorily interdicted.

Gestation presented.

Gestation is not useful, not even safe, in every form of action which a febrile cause assumes, not even safe or useful in every stage or condition of the same identical fever in the same subject. Slight febrile indispositions are sometimes turned off at their beginnings by gestation, or other exercise in the open air; but the beginning of fever is not the period at which the benefits here contemplated are to be expected from this form of remedy. Fever is a disease of a peculiar movement, and, left to its own course, of a defined duration: it varies according to condition of subject and quality of cause; but it exhibits, in all its forms, occasional points of rising and falling within the extremes of the circle, implying action now more languid, now more intense. The application of stimulating power is felt most sensibly at the point of remission, when

Time.

the rapidity of the febrile course abates; and, as this happens sometimes after the third day, sometimes after the fifth or seventh, the stimulation of fresh and pure air applied with impulse, in rapid succession by the progressive motion of travelling, contributes most powerfully, at this time, to bring back the customary action of health, even to confirm its stability.

On this basis—and it is a stable one, it is fair to conclude that the most proper occasion for the employment of gestation refers itself to that period of time, when the diseased movement has completed its circle, or become languid in its course, either by its own act, or by means of remedy, viz. abstraction of blood, the operation of emetics, purgatives, diaphoretics, or other powers which remove complication and bring the system to a state of equal balance. Through whatever means this may be effected, the susceptible condition being restored to a certain extent, the impulse of pure air, during the progressive motion of gestation in a wheel carriage, rarely fails to effect a salutary operation on the state of health. The same impulse makes no impression if the febrile action be strong and the course precipitous; it may even do harm, if there be organic derangement, viz. inflammation, commencing suppuration or effusion into internal parts. —The affusion of cold water on the surface is not exempt from chances of danger in certain delicate conditions of subject, during the febrile state; even aspersion sometimes requires to be made with cau-

Principle.

CHAP. VI.

tion: gestation, on the contrary, may be regarded as safe under the most extreme degree of debility that can well be supposed to exist,—provided there be no derangement in the structure of internal organs. This is a fact well ascertained; and, from it, I conclude that the simple character and the susceptible condition, however attained, present an opening for the trial of gestation; that the complicate d character, and the unimpressible condition preclude expectations of benefit from the effects of the remedy. In this manner, gestation in the open air, in wheel carriages, promises no good in general fever with strong vascular action, or with oppressive plethora; it may even do harm by succussions and joltings, from which the structure of internal organs is in danger of being violated. Where inflammation already exists, whether in the head, heart, lungs, liver or intestines, no person of the least discretion would pretend to recommend it. Its effects are then injurious; on the contrary, they are beneficial where the action is fluctuating and irregular, and where it is principally manifested on mucous membranes and other organs of secretion. On this ground, gestation presents itself as a remedy of great value at the advanced periods of the gastric, or bilious fevers of every country; but more especially of hot climates and hot seasons, provided they are unaccompanied by actual derangement in the structure of internal parts.

Besides the benefits derived from gestation in certain forms and conditions of fever, as now descri-

bed, the good effects of the remedy are striking where disease has ceased, but where the return of healthy action is slow, the form of the action languid and imperfect; in such case, more strength is often gained by travelling for six hours in an open carriage, exposed to all the chances of uncertain weather, than would be obtained from nursing and pampering in well ventilated hospitals, or convenient private apartments during the space of six days. The greater the contrast between the condition of the sick apartment and the condition of the external air, independently of the mode of gestation, the greater is the impression and the greater the salutary effect upon the subject of the experiment. In this manner, the good effects of the gestation alluded to, are conspicuous upon sick persons in the act of removal from infected hospitals, or other infected dwellings. The act is then in general safe; in as much as the infectious fever, in its earlier stage at least, is rarely complicated with strong degrees of internal congestion. The benefit of gestation, as the simple act of motion in pure air, is considerable in itself;—it is augmented by ablutions, by frictions and entire changes of apparel before going out and after coming in. Gestation does not produce effects so instantaneous and so strong as the affusion of cold water on the surface; but it implies less hazard in cases of extreme weakness, and it even promises more permanence of effect; in as much as the means may be continued, not only until the salutary action be moved, but until its course be con-

As forwarding recovery.

CHAP. VI.

firmed; hence travelling from necessity, as occurs frequently in military service, is ordinarily more decisive of good than short airings in easy carriages, undertaken at the instigation and conducted under the direction of physicians.

The good effect of gestation, in certain conditions of fever, is perfectly ascertained by reference to the medical history of military service in different parts of the world. The more important of the conditions, in which it may be resorted to with a prospect of doing good, have been cursorily noticed in the preceding pages:—the cause on which the good effect depends seem to be the following.

Cause.

The pressure or impulse of the common atmosphere may be considered as the direct agent which stimulates and supports animal life, which moves it into action when we first enter the world, and which recalls it when accidentally suspended at after periods. If it be admitted that animal life is excited, and its regular action supported by the impulse of atmospheric air, it is plain that the force of the impulse is necessarily augmented by the act of progression; consequently the force of the cause is increased. Hence, if there exist no extraordinary impediment to counteract the general impulse of the cause, the act of gestation in the open air is converted into a direct and powerful remedy for moving and supporting the action of health;—and, while powerful, it is of all others perhaps the most safe that can be applied to animal organism.

The remedial means already noticed, viz. abstrac-

tion of blood, warm and cold bathing, frictions and gestation in the open air are means which act upon the whole series of organs in the animal system. They are thus in some measure available in all the conditions of febrile action; whether to arrest what is wrong, or to excite, support and confirm the course of that which is right.—They are general and cardinal means: the greater number of the others which remain to be noticed apply to conditions that are more or less circumscribed; or they are in themselves of inferior power only.

F. *Emetic.*

Emetics of one kind or other, have been employed occasionally for the cure of fever, from the earliest records of the medical art to the present time; and, like other remedies of power, they have had their periods of undue praise or of unjust disparagement.—In certain forms of fever, particularly in such as arise in crowded barracks, crowded transport ships, ill ventilated and crowded jails and hospitals, the exhibition of a strong emetic at an early stage of the disease often cuts short its course abruptly; the cause, if one may so speak, being dislodged in the first form of its action, and health restored as a necessary consequence of the dislodgment. On the contrary, emetics do no good; they even do harm contingently where the habit is full, the arterial action high, the pulse hard and tense, or small, deep and contracted—the skin thick and torpid; or, where the func-

Infectious Fever.

Ardent continued.

CHAP. VI.

tions of important internal organs, viz. head, lungs or liver are oppressed by sanguineous congestions.

Periodic.

In periodic fever, particularly in the bilious remittent of the autumnal season, the emetic is often the first remedy prescribed; and the effect is so beneficial that the disease is sometimes totally arrested by it; at least a condition is attained by it under which it is easily arrested by other application. In catarrhal fever, dysenteric fever, eruptive fever; and in short, in most of the fevers that manifest prominent action on the skin or mucous membrane, the benefits of the emetic are highly conspicuous. They mitigate the violence of symptoms; and, if they do not actually arrest the course of the disease, they prepare the way for its being more easily and more effectually arrested by others. It is not, I believe, usual to prescribe emetics where the patient is languid, exhausted, or oppressed at late periods of fever: the remedy has notwithstanding been so employed by myself; and it was employed with advantage where febrile movement was languid, or where action was oppressed by congestion in the mucous membrane, and other secreting organs within the abdominal cavity:—the effect was the same, whether the form was continued or remittent. A prejudice exists with many against the use of emetics in the fevers of the West-Indies; and emetics, I am free to say, do no good—they even do harm contingently in the ardent and concentrated forms that present themselves in that country, if given without preparation, particularly without preparation by abstraction of blood; but, even when so gi-

Languid and late Stage.

ven, they do less harm than I was at one time disposed to believe. The violent and irrestrainable vomitings which sometimes occur in the fevers of the tropical latitudes, and which are often imputed to the injudicious exhibition of emetics, arise in reality from a modified action of the cause of the disease; for I do not find, in referring to the case-books that are still preserved in the office of the Inspector of Hospitals at Barbados, that vomiting was a more common symptom, or a more formidable one where emetics were given in almost every case, —which was the practice at one time with some; and, where they were scarcely ever prescribed, which, as the same case-books shew, obtained at another time, or with other persons at the same time in other hospitals.

Mode of Exhibition.

The conditions now noticed are the more common ones under which emetics have been prescribed in febrile diseases; but I must here add that the individual circumstances of the patient and the manner in which he is treated, previously to the exhibition and during the operation of the remedy, materially influence the effect. In some cases, the abstraction of blood, even to a large extent, is indispensably necessary to assure a safe and effective operation; in others, the preparation of the stomach by tea, whey, warm water, or other beverage, in which a certain proportion, viz. fifty or sixty grains of salt of tartar or salt of wormwood, have been dissolved, is no less useful. This form of preparation cannot be well dispensed with in phlegmatic habits,

CHAP. VI.

where the tongue is foul, the saliva viscid, the mucous secretion adhesive and over abundant. Besides the dilution here recommended, previously to the exhibition of the emetic, the stomach is to be washed out at intervals, during the operation, with alkalized infusion of chamomile or warm water. Further, as the operation of emetics is most effective and the effect most salutary where the skin is warm, the patient is to be disposed in bed, the temperature of the apartment so regulated that the perspirable condition of the surface be easily preserved. As it is often seen that an emetic of severe operation arrests, or sensibly mitigates the force of the disease while a mild one has no beneficial effect; it is proper to administer emetics of severe operation in the stronger forms of fever and to encourage the vomiting, until the secretions which are influenced by its action be evidently changed, the existing action of the disease brought to arrest—by faintness or other contingence.

Besides difference of effect, arising from the different manner of managing the patient during the operation of the emetic, difference also arises from the different nature of the substance by which the effect is produced. Ipecacuanha is the most common substance employed for this purpose; and it is perhaps upon the whole the mildest of those that can be considered as effective. It acts directly on the mucous membrane; and, where the force of the disease is principally exerted on the surface of that membrane, it is the best and safest of the emetic

Ipecacuanha.

class. Where the functions of the principal organs in the abdominal cavity, particularly the functions of the liver, are sluggishly and imperfectly performed, tartarized antimony is to be preferred. It acts with more severity and for longer continuance; and it thus has more power in subverting actions that are diseased,—perhaps of stimulating actions that are languid. It acts on some occasions so as to arrest the total course of continued fever: it may be so timed in exhibition, and so directed under operation as to prevent the recurrence of the paroxysm of the intermittent—not unfrequently to prevent relapse whether of the intermittent or other form. Zinc or white vitriol operates speedily as an emetic, —and it operates safely. It acts powerfully upon the secretions of the mucous membrane; and, as such, it acts beneficially in *catarrhal* and *pituitous pneumonia*,—the collected pituita being not only dislodged, but the secretion moderated—even suspended for a time by its operation.

Tartarized Antimony.

Zinc.

The ejection of offensive matter from the cavity of the stomach; and, on some occasions, from organs of secretion that are nearly connected with it, presents itself as the direct effect of emetic. The effect is ostensible; but we are not therefore to consider the act of expulsion as the act upon which the benefits of the remedy radically depend. The surface of the membrane to which the emetic drug is applied, excited into action by peculiar stimulus, experiences violent commotion in its structure, even subversion of actions which exist at the time whe-

Principle.

CHAP. VI.

ther it be natural or diseased. The influence extends to contiguous membranes and even to parts that are remote; and, in this manner, the biliary secretion and even more distant secretions, especially those of the cutaneous system, experience commotion and change in their condition under the operation of strong emetics,—a change which contingently involves a permanent change in the condition of the general health of the whole system. The emetic thus becomes a remedy of great power, as given in the suitable condition and aided, during the operation, by every necessary accessory capable of improving its effect. A glass of brandy, a glass of spiced wine, a draught, composed of laudanum, antimonial wine, æther, or aromatic and spirituous tincture, given after the emetic operation ceases, frequently does good, by stimulating to a new action analogous with that of health, and, even by contributing, in some degree, to maintain the salutary action after it is restored to its course.

G. *Purgative.*

Purgative remedies occupy a prominent place in the catalogue of means employed for the cure of fever, both in ancient and modern times; but they have not been, and are not even now always employed in the same manner, and with the same curative view in analogous cases of similar diseases by different persons. There are some who interdict every purgative during the first days of the

febrile course; there are others, who employ even the harsher forms from the very commencement; and who, repeating them at short intervals, carry alvine evacuation to excess. The first class wait, according to their theory, for a certain preparation of the offending matter termed coction; and there is reason to believe that, when such preparation is effected, the exhibition of the purgative often contributes to render the crisis complete, at least more decisive than it otherwise would be. The second aim at diminishing the violence of the disease in all its stages,—and they attain their purpose to a certain extent.

Rule.

It is evident to common sense that, where the force of the fever is principally exerted on the secreting surfaces of the alimentary canal, or on the function of organs in the abdominal cavity intimately connected with it, the action of strong purgatives necessarily makes impression on the whole series of connexion, and not unfrequently produces favourable change on the character of the disease, directly or indirectly. If the purgative carry off offending matter, it palpably diminishes a cause of annoyance; and, if by stimulating to a new train of action, it arrest the action of the disease in the part so stimulated, it may be supposed to effect, or to contribute towards the effecting of a cure—partial or general, temporary or permanent as the case may be. If the febrile action be general, or if it be complicated with sanguineous congestion in any of the organs within the abdominal cavity; or, with what

Condition of Disease.

CHAP. VI.

is termed inflammatory action in the peritonæal coat of the intestines: in short, if there be sanguineous congestion, or active inflammation in any part or organ within the circumference of the body, the exhibition of purgatives, simply as purgatives, promises no material good; on the contrary, the purgative act is frequently injurious. In a plethoric state of the vascular system, more expressly in the higher degrees of the ardent fevers of the West-Indies, the action of purgative remedies has appeared to myself to be equivocal,—hurtful rather than useful. The strongest have no purgative operation in many cases; or, if they have, the mode is irregular and by starts,—the evacuation watery—unaccompanied by relief. In the bilious remittent of the milder form, the good effects are obvious: they are equivocal in concentrated forms—with a dry, constricted and withered state of the skin. The emetic, as observed above, cuts short the course of fever by its own power on some occasions: the purgative diminishes the violence of symptoms and renders the course comparatively regular; but it has very little credit, according to my own experience for accomplishing absolute cure.

Such, as has been stated, is the result of the operation of the simple purgative on the more common forms of febrile disease as it first presents itself. The condition is changed by preparation; and the effect of the purgative is thereby rendered more sure and effectual than it otherwise would be. Of the various means employed to prepare the febrile sub-

ject for the exhibition of purgatives, the abstraction of blood may be considered as the principal. It restores general susceptibility by removing general or local congestions and constrictions; and it thus renews activity of function among the organs of secretion. Besides abstraction of blood, which acts as now stated, a warm or rather a high temperature of the sick apartment, fomentations of the extremities, frictions of the skin with warm oils—and even the warm bath may be regarded as means which forward the favourable operation of remedies of this class. Dilution with alkalized beverage previous to exhibition, and during the time the remedy continues to act, more especially where the first passages abound with viscid and tenacious phlegm, contributes very materially to aid the good effect.

Preparation.

The simple purgative, whether salts, jalap, rhubarb, aloes, colocynth, senna or magnesia, can scarcely be supposed to extend its operation beyond the limits and direct connections of the alimentary canal; it cannot therefore be supposed to act materially on the course of a disease which extends to and acts in every part of the system. The simple purgative is thus limited as a remedy,—temporizing and palliative. The sphere of operation is extended, the force augmented, and effect rendered decisive by combination with other means. Of compound forms, five or six grains of calomel, followed at an interval of some hours by divided doses of dilute solution of epsom salts and tartarized antimony, may be considered as one of the best in

Compound Forms.

CHAP. VI.

bilious remittents, particularly in hot countries. It is a common form—and it is upon the whole a good one; but jalap—with calomel, is more frequently employed by military practitioners; and it has superior advantages in many cases, particularly as combined with James' powder. Infusion of senna, with a certain proportion of kali, is well adapted to the pituitous condition; and if a portion of antimonial wine, aqua ammoniæ acetata, occasionally æther or other aromatic and volatile tincture be added to it, the evacuations are often feculent—rendered without irritation—and they bring relief. Calomel, with extract of colocynth, &c. made into pills for the sake of administration, appears frequently among the purgative forms of medical officers of the army,—and it is upon the whole a good one. Two ounces of aloes and one of myrrh—the myrrh dissolved by rectified spirits of wine, a pint of the best French brandy being super-added, forms a purging tincture of peculiar excellence in some forms of disease,—two drachms more or less for a dose. It rarely operates in less than twelve or fourteen hours after it has been given; but, when it does operate, it produces evacuations more feculent and effective than any other form with which I am acquainted. The operation is accelerated by the addition of a tea spoonful of æther; and the addition of one ounce of oil of turpentine often gives it great power. Where the bowels are torpid and the hypochondria inflated, as happens not unfrequently in the late stages of fevers of the gastric

class, its good effects are eminent. It is retained on the stomach where purgatives of a less offensive taste are rejected; and, while purgative, it seems to stimulate the whole alimentary system to the proper exercise of its function.—Every purpose, that can be attained by means of purgatives, may be attained by one or other of the forms now noticed.

H. *Diaphoretic.*

Diaphoresis usually attends and apparently contributes to the purpose of effecting a favourable termination of fever; and as the means employed for that end are various, and some of them not altogether harmless when misapplied, I shall briefly notice the leading conditions which define their use, that is, promote or mar the success and safety of the effect. There are two views, by which the application of the means intended to excite perspiration, are to be directed, viz. removal of artificial constriction from the organ of secretion by subtraction of blood, aided by fomentations of the surface with warmth and moisture; or, direct stimulation by heating internal remedies and heated external air, intended to overcome resistance by something like direct force. The first is the safest—and it is the most effectual. It is even often indispensable as precursor of the other, where the other is ultimately in view; for, where the skin is constricted, thick—and as it were compacted, heating internal remedies, though they accelerate the circulation, rarely overcome the stric-

Means.

CHAP. VI.

ture of the surface, so as to establish a free and copious perspiration throughout. Abstraction of blood, immersion of the body in warm water, fomentations with flannels wrung out of hot water, succeeded by the sudden affusion of cold water on the surface, constitute the principal of the first class of diaphoretics. Various internal remedies are employed in this view also—some of them more, some of them less directly stimulant. Of these, James' powder, compound powder of ipecacuanha, aqua ammoniæ acetata, and a compound of nitre, tartarized antimony, camphire and opium are the most common—the safest and the most effectual.—The above apply to cases where there is more or less of constriction, dryness and heat; where there is dampness,—with a thick and greasy state of the surface without actual diaphoresis, snake-root, contraerva, ammonia, salt of amber and ablutions with salt water, salt and vinegar, &c. may be employed with safety—and they are often employed with success. Among the means of establishing and maintaining diaphoresis, the adjustment of the air of the apartment is a matter of importance,—it ought to be pure and of rather a high temperature.

Conditions.

As the force and dangers of fever are often diminished by purgatives, given at short intervals during the course of the disease; so their violence is moderated and the course conducted to a favourable issue, in a somewhat similar manner, by means which maintain an equal and gentle perspiration throughout,—such for instance as remove resistances—not such as extort sweat by excess of stimulation, whe-

ther drugs, or wine and ardent spirit: the effect of these, instead of being salutary, is often hurtful—even destructive.

I. *Mercury.*

Mercury has been employed, and confided in as a remedy of principal dependence for the cure of certain forms of febrile disease, viz. the hepatic and dysenteric, for many years past—more particularly in the East-Indies than in other countries. Calomel, simply or combined with jalap, has also been long employed by the medical officers of the British army, and even by ordinary practitioners in the West-Indies and North-America, as a convenient and effective form of purgative at the commencement of fevers, more especially fevers of the periodic class. These practices are of old date, and do not require to be discussed on the present occasion. The practice, now to be considered, is comparatively new; and the management of it is directed by what may be held to be a new principle in medical theory, viz. the excitement of artificial salivation to arrest the existing course of a fever. Dr. Colin Chisholm, of the medical department of the Ordnance, may be considered as the author of the practice. He brought it to experiment in a malignant and fatal form of disease, which appeared in the island of Grenada in the year 1793. If we allow ourselves to estimate the value of the remedy by the success of the effect, as exemplified in

CHAP. VI.

the Ordnance hospital at Grenada, we cannot ra it high; yet, notwithstanding the negative testimo on this occasion, the exhibition of mercury internall and the application of it externally by friction wi a view to induce salivation dates from this origin and, in spite of failures, it has extended further an maintained itself longer among practitioners in th West-Indies, both in the army and in the civil com munity, than almost any other known remedy. I therefore becomes necessary to examine the subjec without prepossession, and to state the result can didly for the information of those who desire t know the truth.

Numerous experiments, of what is termed th mercurial plan of treating fevers, have been mad by the medical officers of the army since the ye 1793; and, though none have been made profe sedly by myself, the steps of the process and i results have often fallen under my observation i the course of my official duty as Inspector of hosp tals. From a candid review of the whole, I thin I am warranted to confide in the following concl

Slight or Periodic Form.

sions, viz. 1. That where the disease is of the inte mitting or remitting type, the intermissions or remi sions distinct, the skin soft, thin, warm and persp rable, the pulse free and expansive,—in short, whe the symptoms are of a secondary degree of violenc the salivary glands are for the most part soon a fected by mercury, whether given internally c applied externally by friction; and further th where the glands are affected and a free and copio

salivation established, the disease ordinarily abates in force—and even sometimes ceases altogether. The rule is general,—not absolute; for instances occur—and not unfrequently where the paroxysm returns after salivation is fully established;—even some are recorded where death has not been averted, though the reputed sign of safety was present.

Concentrated.

2. Where fever is of the continued kind—whether endemic simply, epidemic or infectious, the symptoms violent, the heat ardent, the skin thick and compacted, dry and torpid, as connected with excessive excitement and precipitate action; or, thick, greasy, damp and inanimated, as connected with constriction and diminished energy of the capillary system, calomel may be given internally to great extent, and mercurial ointment may be rubbed upon the surface in great quantity, without the salivary glands being in any degree affected by it. The case is common; but in other cases, the gums become spongy and livid, the breath emits the mercurial fœtor,—but no salivation takes place, and no change is effected on the course of the disease; which proceeds steadily to its natural termination—frequently a fatal one; or, if signs of recovery manifest themselves, the progress of the recovery is slow:—sometimes an increased discharge of saliva supervenes in the course of it, which, by its excess, brings life into danger.

The conditions now described are extremes; they comprehend what is most important, relative to the effect of mercury as a remedy for the cure of recent

CHAP. VI.

Slow Fevers.

fever. In fevers of a slow course and protracted duration; and more particularly in fevers complicated with congestions in the more important organs within the abdominal cavity, the internal exhibition of mercury and the external application of it, carried to the extent of producing more or less of ptyalism, has appeared to myself to be a remedy of value; in fact often the only remedy, especially as aided by medicated diets, by bathings, frictions and the exercise of gestation, on which any dependence can be placed for effecting cure, or even for prolonging life. Mercury, in one form or other, aided by medicated diets, baths and frictions, is frequently employed in certain protracted forms of dysenteric malady,—and its benefits, where it is properly managed, are important and well proved. Calomel,

Dysenteric.

with opium, and sometimes with the addition of ipecacuanha, has, in a manner, superseded all other forms of remedy for the cure of recent dysentery with some practitioners in British military hospitals. In these, I have seen it employed on a large scale, and so exclusively of other means that I consider myself as entitled to speak with confidence of its effects. 1. Where the cause of the disease appeared to act principally on the mucous membrane of the intestines; and, where the action was only of second-rate violence, ptyalism or salivation was, for the most part, soon induced by calomel combined with opium. Where salivation was induced, the violence of the disease ordinarily abated;—and, in a few days, the disease actually ceased, sometimes

permanently; sometimes only temporarily, the symptoms recurring at a short interval after the ptyalism disappeared. 2. Where the action of the cause of the disease extended to all the coats of the intestines, particularly to the peritonæal, the benefits of the mercurial treatment, simply as mercurial, were very equivocal. It rarely in fact made any impression: the disease proceeded uninterruptedly to a fatal termination; or, it terminated by congestions in the mesentery and coats of the intestines themselves so as to leave the patient valetudinary—sometimes for life.

The above is the sum of what I have to remark respecting mercury, as employed in different forms of recent fever and recent dysentery, without a previous preparation of the subject by art. The preparation of the subject, particularly as effected by abstraction of blood in the more concentrated fevers and more complicated forms of dysentery, is indispensable to the success of the primary effect; that is, to assure the action of the remedy on the salivary glands. The quantity of a thousand grains of calomel has often been given internally, ounces of ointment being rubbed at the same time upon the body externally, without producing the smallest increase of salivary secretion. In such case, the disease ran on to a fatal termination as if nothing had been done: in others, perfectly analogous, the abstraction of two, three, four or more pounds of blood changed the condition, in such manner that a moderate quantity of calomel acted immediately and effectively on the salivary glands; hence, the saliva

Preparation.

CHAP. VI.

flowing freely, the fever, whether general or dysenteric, usually abated—and often finally ceased. I leave it to the reader to form his own opinion, whether the effect belonged to the mercury or to the bleeding. It has been the custom of late, with some of those medical officers of the army who are prepossessed in favour of the mercurial plan of treating fevers, to give calomel in doses of a drachm or half a drachm after the subtraction of a large quantity of blood, viz. three, four, or even five pounds according to the intensity of the symptoms. The salivary secretion is soon moved by this form of proceeding: the disease is overcome, and the mercury obtains credit for what, according to another—and perhaps a truer view of the case, is actually owing to the abstraction of blood. If mercury be applied externally, or given internally without previous preparation by abstraction of blood or other suitable means, the salivary discharge rarely begins to flow before the third, fifth or seventh day of the disease, —generally not until after one or other of the more remarkable critical periods of fever. The knowledge of this fact, obtained through observation of the progress of diseases—and confirmed by reference to case-books still preserved in the office of Inspector of hospitals at Barbados, warrants the conclusion that mercurial action, as manifested by salivation, is an indication of the suspension or cessation of febrile action effected by art or nature, rather than the cause of the actual suspension or cessation—in counteraction of the power of the existing disease.

The conclusion is important—and I consider it as established.

Effects comparative.

Upon the whole, I venture to maintain that if the results of what is termed mercurial treatment in fever and even in dysentery, particularly in British military hospitals where it has been most extensively employed, be candidly reviewed; the high, or rather the extravagant opinion which has been, and which is even now entertained of the salutary powers of that remedy, is not well supported. The advocates of mercurial treatment generally assert that no one dies from fever after salivation is fully established. The assertion is not altogether correct; but even if it were, and if it appear, in a reference to hospital case-books, that there is one in three of the more concentrated forms of endemic fever in which calomel, given alone or in combination with opium to the amount of a thousand grains or more, produces no increase of the salivary secretion; consequently does not produce the effect which controls the fatal tendency of the disease: and further, if it appear, through the same channel of information that the same disease, when left to its own course or opposed by ordinary means of treatment, does not destroy life in more than one case in three, the most prepossessed in favour of the remedy will not maintain that we gain any thing by the experiment; —and it is evident that, if we gain nothing certain, we lose time and chances of gain from other means. But though the effect of mercury, even where it does produce an increased discharge of the salivary se-

CHAP VI

cretion, is not uniformly decisive of the cure of fever; and though the action of the remedy—without artificial preparation by bleeding or other means not implied in the plan of mercurial treatment, be extremely uncertain, the practice still holds its ground,—and it probably will maintain it for many years to come: it hangs on a specious delusion, viz. the expectation of an effect considered as in some measure specific of cure. I abstain from further remark on the subject,—only adding that, if the case be viewed without prepossession, and if the hospital returns of the person who first adopted the practice at Grenada in the year 1793, and of those, who have pursued a similar practice in the different military hospitals in the West-Indies since that time, be admitted as documents of effect, the arguments for the continuance of it do not appear to be strong.

The remedies, the mode of operation and effects of which I have adverted to in the preceding pages, are calculated to arrest the febrile course abruptly, or to moderate its violence and diminish the danger of its action. The most of them are depletory, either of blood or secreted humours; consequently the effect is visible in the functions and offices of organic structures. Besides the depletory which are employed principally with a view to arrest or change the existing morbid action, there is another class employed to prevent recurrence after the action has been arrested artificially, or ceased temporarily of its own accord;—and further, calculated to excite the activity and confirm the stability of the

healthy action after it is reproduced.—These are usually termed tonic.

K. *Peruvian Bark.*

Peruvian bark stands at the head of the list of tonics. It is an important and a powerful one; but, before an opinion can be given concerning the mode of operation through which it prevents the recurrence of the paroxysms of periodic fevers, it will be proper to ascertain, by unprejudiced observation, what are the precise conditions of habit which favour or oppose the effect expected from it.

Favourable Condition.

1. Bark, when of good quality and given to sufficient quantity, rarely fails to prevent the recurrence of the paroxysm; that is, to arrest the course of the disease where the paroxysm terminates by copious, fluid and warm perspiration, where the skin is soft, warm, sensible and animated, the pulse soft, free, expansive and more frequent than natural, where no marks of constriction or congestion are perceivable in the organs of secretion,—and where sensibility is preternaturally increased throughout the whole system.

Unfavourable Condition.

2. Bark, of the best quality, is often given without preventing the recurrence of paroxysms where the paroxysm, instead of terminating completely by copious, fluid sweat or other evacuation, subsides silently and imperfectly by partial clammy perspirations; where the pulse, during the period of subsidence or intermission, is hard and tense, or deep and concentrated, small and irritated,

CHAP. VI.

obscure, creeping and oppressed; where the skin is dry, constricted, torpid, thick and compacted; where the bowels are torpid—little obedient to the action of purgatives—the urinary secretion irregular, and other secretions more or less impeded; where there are marks of general plethora or stagnation in the venous system—known by a dark or scurvied colour of the skin; where there are marks of congestion—sanguineous or phlegmatic in the substance of important organs, viz. liver, lungs, head or spleen; and finally, where the function of the sentient system is unusually disordered, its susceptibility suppressed generally, or its irritability increased and irregularly balanced, as expressed by fretfulness, restlessness and other forms of distress. Bark ordinarily fails in preventing the recurrence of the febrile paroxysm in the condition now described; and, it was probably in conditions somewhat similar to the one noticed, that the failures were so numerous in the fever which prevailed among the British troops at the seige of Flushing, and during the occupation of the island of Walcheren in the year 1809. It fails frequently, perhaps generally in the more concentrated of the periodic fevers of the West-Indies as given without preparation, or with no other preparation than that which follows an emetic or purgative.

Condition produced by Preparation.

But while I admit this—and I have seen it often proved, I can also say, from ample experience, that the effect may be rendered sure by previous preparation and proper combination during exhibition;

in so much as not to fail once in a hundred times in cases of the genuinely intermittent type:—it is not to be depended on for the precipitate arrest of the remittent, either in the West-Indies or in other countries. The remittent appears to proceed in a defined course to a given critical termination, in spite of the largest quantities of bark that are given to prevent it. I formed this opinion on the subject from what I observed of the fevers of Jamaica between the years 1774 and 1778; and I find the truth of it confirmed by reference to case books which are still in existence in the Inspector's office at Barbados. The cases, in the books referred to, were taken down and recorded without any view to the question here implied. I analyzed them, and found that the terminations were generally on critical days,—the progress of the disease not arrested artificially by treatment.

I have stated the fact historically, as it has appeared to myself through a long course of experience; and as it is evident, from the history given, that there are various conditions in the animal system, when under the action of a febrile cause, which counteract the power, or render void the impression by which the peruvian bark prevents the recurrence of the febrile paroxysm, it may be thought necessary that I explain what these opposing conditions are, and that I notice the means by which they may be best and most easily removed. 1. No reliance can be placed on the action of peruvian bark as a remedy against the recurrence of the paroxysms of

CHAP. VI.

the intermittent, where venous plethora, general or local, exists to any extent in the system; where the foundations of congestion, or changed structure already exist in any of the important internal organs; where animal sensibility is impaired—suppressed generally, or irregularly balanced in the different series of parts; where the skin is constricted and close—or damp, greasy and torpid;—in short, where ever susceptibility of impression is diminished or obscured, whether through open or latent action, the operation of bark is uncertain—rarely salutary. 2. Bark, on the contrary, rarely fails to do good, even to arrest the disease, where sanguineous plethora and other congestions are removed from every part of the system, where circulation is free and equally balanced throughout, animation equally diffused to all parts of the surface, susceptibility of impression above the natural degree, whether produced by inanition from abstinence under the continuance of the disease, or by artificial depletion. It being thus evident that conditions are different as the case presents itself, it necessarily becomes the first step in the physician's course to bring the differing conditions to a standard level by artificial preparation, previously to the exhibition of the remedy.

Preparation.

The means to be employed for that purpose are similar to those employed for the affusion of cold water on the surface, viz. abstraction of blood to greater or lesser extent; emetics, more particularly antimonial emetics; purgatives, particularly those that operate actively and extensively; diaphoretic and

attenuants; tepid baths, and, on some occasions, the application of blisters to the neck and spine.

Mode of Exhibition.

Where the condition suitable for the exhibition of bark is present, whether existing naturally, or prepared artificially; it is proper that the remedy, either simply, or in combination with such other aids as increase its power, be given in cases of intermittent to the quantity of two drachms at a time —every other hour. The quantity may be increased to half an ounce or more, where life is threatened with danger if the recurrence of the paroxysm be not prevented. On the contrary, doses of two scruples, or of one drachm at most, at the interval of three hours, are more suitable in the remittent. —The quantity stated has appeared to myself to be sufficient to guard the habit against untoward changes; and no quantity appeared to me to be sufficient to arrest the course of the disease by force.

Base on which it acts.

The effect of peruvian bark, in preventing the recurrence of febrile paroxysms, having been stated historically, and the conditions of habit, under which the effect is attainable, having been noticed cursorily, it may perhaps be expected that some opinion be given, or some conjecture offered concerning the identical mode of action through which the effect is attained. As the course of the disease is arrested by the exhibition of bark without the production of any visible operation; at least without the occurrence of any sensible evacuation from organs of secretion, it is reasonable to suppose that the remedy acts on the solid fibre, changing its

CHAP. VI.

condition,—and, by some inexplicable operation of tonic power, diminishing its irritability—in such manner that the periodic recurrence of the febrile cause fails to excite the periodic febrile irritation. Where the disease is without complication, the more relaxed the habit and the greater the general mobility of the locomotive power, the more certain is the repressive effect of the remedy. If this be so,—and it is proved by history, it is fair to conclude that bark conveys to the fibre some imperceptible condition, whereby the impression of contingent stimulations,—and, among these, the stimulation of the cause of periodic fever is resisted. Bark gives firmness and elasticity to the muscular fibre, force and energy to the locomotive power, imparting to the habit a species of vigour and activity, not unlike that which is derived from exercise in open and pure air.—Bark is upon the whole a safe remedy. It is admitted that it does not arrest the disease; or, that it arrests it only temporarily and imperfectly, if the condition under which it is given be not the proper one; but, in a long course of experience, and with numerous opportunities of seeing it fail of doing what was expected from it, I have seen very few instances of its actually doing harm, where the matter was sifted to the bottom and the real act of the remedy fairly ascertained.

There are other remedies besides peruvian bark, which have been employed occasionally for the purpose of preventing the recurrence of the paroxysms of intermittent fevers; and, of late years, a solution

Arsenic.

of *Arsenic*, prepared according to a form of Dr. Fowler, has been common—and much celebrated by military practitioners. Arsenic appears to me, though my experience of it is not very extensive, to suppress the paroxysms of intermittents, as complicated with visceral obstruction, more effectually than bark according to the manner in which bark is usually given; but, though I am convinced of its safety as given with requisite precaution, I have seen nothing in its effects which induces me to recommend it, in preference to the common remedy, in recent and simple cases of intermittent. Besides arsenic, *White Vitriol* or *Zinc* is sometimes employed for the cure of intermittents—and not unfrequently with good effect. It is a safe remedy, —and its virtues are eminent in intermittents connected with the phlegmatic constitution of habit,—even where there is more or less of congestion in organic structures, especially in mucous membranes:—it is improved by the addition of rock alum.—To the above I may add *Spider's Web*; which is more effectual in preventing the return of febrile paroxysms than any other remedy of which I have knowledge,—but its virtues are to be noticed under another head.

Zinc.

Spider's Web.

L. *Wine, Brandy, &c.*

Bark, Arsenic, &c. prevent the recurrence of febrile paroxysms by a peculiar operation of tonic power diminishing irritability, or changing the

CHAP. VI.

condition of aptitudes: wine, brandy, &c. seem onl to stimulate so as to support the activity of life:— they do not arrest or subvert the base of the existin action. The history of this class of stimulating re

As employed by different people.

medies is somewhat perplexed. At one time, an with one class of physicians, wine, brandy and othe cordials are considered as injurious, consequentl peremptorily interdicted: at another time, and wit other men, they are considered as means of princi pal dependence, consequently warmly recommen ded. It would be a vain and useless labour to a tempt to reconcile such difference of opinion. I originates in theory; and the theory is so dogmat cally announced, its truth so implicitly relied on s to preclude the chances of accurate observation. I the cause of fever be stimulant,—the action direc excitement; stimulants which raise the febrile actio to a higher scale cannot be supposed to be proper if the cause be sedative,—the act depressive; stimu lation may be supposed to present itself as dire means of cure. It does not belong to this place t enter into formal discussion on the subject. I sha therefore content myself with stating historical fa as it occurred within my own observation.—Th French and German medical officers, whose trea ment of sick soldiers it has been my duty occasion ally to superintend, subtract all forms of stimulatin power in the early stages of fever. The British, o the contrary, are inclined to stimulate; and, durin a certain period of the war 1793, stimulation wa often carried to excess in British military hospital

even from the beginning of the disease. The final results were not precisely the same in a French and British hospital; but they were less different than they might have been expected to be from the effect of directly different means of treatment.

Rule of Application.

In fevers, which occur in the sanguine constitution, and which manifest force and energy of vascular action, wine or other cordial is evidently superfluous: if the habit be full, the action highly and irregularly excited in particular organs, there are chances that it may be injurious. The preternaturally excited action may be supposed, by doing violence to the coats of tender vessels, to occasion extravasation,—and it sometimes actually does so; but it is, at the same time, to be remarked that it sometimes also, by exciting perspiration or evacuation through the skin, brings relief and actually accelerates a favourable termination. In fevers which occur in the phlegmatic constitution, particularly in such as usually go by the name of typhus, the injuries of wine or other cordial at early periods are less to be dreaded: the benefit is in fact often obvious and important—and the cause of it is comprehensible; for, if the moving power be kept under artificial impression by means of well measured powers of stimulation, the force of the febrile action is absorbed, or to a certain extent immerged in the action of the remedial stimulus: local congestions are prevented from taking place; and, when the means are judiciously managed, they are even removed if the foundations have not been deeply laid. Wine and other

CHAP. VI.

cordials are, or may be employed with benefit as auxiliary in the cure of many forms of fever; they are scarcely to be considered as sole or principal in any. I am ready to admit that it is only by stimulation that we arrest the course of fevers. It is by a succession of stimulations also that animal life is supported in a state of efficiency; but wine and brandy and similar ingesta, though often grateful to the taste and correspondent with the prejudices of the patient, are not the most effective of the purpose;—they are at the highest estimate auxiliary only.

We have no just ground to proceed upon for the institution of an artificial preparation which renders the effects of wine or other cordial decisive of cure; for, though wine acts favourably where the animal power is depressed, or its activity dormant, there is no good reason to expect that an absolute arrest of the disease will follow from a high dose of the remedy—not even from intoxication. This however I am aware has sometimes occurred—but not often: if it does occur, it is a contingence which cannot be calculated and on the chances of which no discreet physician would venture to act; the rule, therefore, which must guide in the employment of wine as a remedy in fever, is a rule of experiment only.

In continued fevers in phlegmatic constitutions, wine, or, where wine is not sufficiently powerful to make impression, brandy, given at measured intervals for some time preceding the critical or dangerous period, is often a remedy of value. It is to be given in such quantity, and in such quantity only

as makes an effective, but safe impression on the system—the rule of judging the time and quantity to be drawn from the increased animation of the pulse, and often from the increased confidence that arises in the mind under its operation. I think I may venture to say that the chances of subsidence, or fatal depression are diminished by wine or cordials exhibited in the manner stated; even that death, if one may so speak, is sometimes warded off by the artificial defences thus opportunely interposed. To this I may add that the exhibition of wine, or other powerful cordial is often propitious in malignant periodic fevers; where given with a view to anticipate the recurrence of the paroxysm, and given in quantity to impress the system with that form of action which is peculiar to itself. The effect, if the adjustment of all things be well concerted and well applied, is often decidedly favourable; but the application of means of this description must be nicely balanced; it cannot be entrusted to a common nurse, or to the orderly of a military hospital,—so entrusted, it has perhaps done more harm than good.

Porter.

Besides wine and brandy, which are the more common of this class of remedies, bottled porter, &c. often stands among prescriptions in military hospitals. Porter is more generally relished by British soldiers than wine; and its effects are often more cordial to them and more refreshing than the effects of any other liquor.

Champaign.

Champaign wine has advantages over all other liquors in cases of depres-

CHAP. VI.

sion in continued fevers, and more especially as employed to anticipate the depressive tendencies of paroxysms in the treacherous periodic; but it is a remedy, within the command of the rich only.

Official Drugs.

Ammonia, æther, salt or acid of amber, are among the more powerful of officinal stimulants. Their effects are of short duration; and they are only available by those who narrowly watch, or in a manner nurse the sick: employed with judgment, they contribute with other means to rescue the patient who is in a desperate condition from the hands of death; but they are not general remedies.

M. *Opium.*

Indiscriminate Use.

Opium is another of the remedies frequently employed for the cure of fever. Its credit was so high a few years since, with a certain class of practitioners in Great Britain, as in a manner to supersede every other curative means, except wine. The experiments, made with opium and wine, were made on a very extensive scale in British military hospitals at the earlier periods of the war 1793; but the results cannot be said to have been fortunate; for while the sickness, both at home and abroad, was ordinarily high in proportion to the number of the troops, the mortality was great in proportion to the number of the sick. Opium was considered at that time as the sovereign remedy in typhus fever; and the fevers, which appeared among the troops at that period, were generally designated by

that name. They were infectious originally, or they became so subsequently by mismanagement, viz. accumulation in ill ventilated hospitals. Opium, in one form or other, was here the remedy of principal trust; but, in so far as I was able to judge from my own observation, it did not act decisively on the course of the disease; while, by obscuring the natural expression of its character, it often masked the dangers and misled the physician to make a wrong prognostic of the event. But, though opium has no claim to be considered as a general remedy for the cure of fever, it is notwithstanding a remedy, when properly applied, capable of affording relief from pain and even sometimes of apparently averting danger. It is, or it may be of value where the action of the fever is irritative, irregular and fluctuating; it is, on the contrary, hurtful in local congestions or suppurative inflammations in internal organs. It is to be avoided in pituitous and viscid secretions, viz. in the form of disease termed *peripneumonia notha*—characterized by agglutinating effusions of lymph into the cells of the lungs.

Opium ranks directly among stimulants; for though the effect, as viewed superficially, be stimulant at one time and sedative at another, the laws of animal economy are consistent, and it is to be inferred that the operation moves radically on the same base in both. Where the action of the disease is principally manifested on the organs of the sentient system, the influence of opium, which acts

Mode of acting.

CHAP. VI.

principally and directly on sensation, supplants that action by engrafting its own; hence, it is observed that violent febrile delirium and violent muscular agitations, especially in paroxysms of fevers of the periodic class, are often restrained, even perfectly overcome by a large dose, viz. a hundred drops or more of the tincture of opium. The quantity required to produce the effect corresponds with the violence of the irritation existing at the time; that is, the force of the diseased action requiring arrest or controul. In this manner, one hundred and fifty drops of tincture of opium may be given in a plethoric state of the system with strong irritative action, pains and spasms—without producing any material effect: five and twenty, or thirty may be regarded as a full dose, where the habit is rendered susceptible by artificial evacuation or inanition; fifty or sixty may then be dangerous.

Quantity.

Mode of Exhibition.

Opium is a remedy of power, and the exhibition of it in practice, according to my own opinion, is to be regulated by similar considerations as those which regulate the exhibition of wine, or strong liquor, viz. given in quantity to effect its own impression at the dangerous periods of the disease, particularly previously to the expected return of the paroxysms of fever of malignant or treacherous character; especially such as are accompanied with unusual despondence and depression of mind, or as manifest a disposition to spasm, convulsion or other mode of irritation. As the effects of opium, like the effects of other remedies, correspond with the

existing condition of the subject to which the remedy is applied; so the good effects are augmented by combining with it such other means as bring out the favourable condition, or as improve it when already existing; more particularly by the use of external fomentations and the internal use of diaphoretics.

N. *Cob-Web.*

The spider's web, and even the body of the spider has been, and still is employed by the vulgar of some countries, as a remedy for the cure of ague and fever; but, when mentioned by medical writers for such virtue, it is for the most part mentioned only to be ridiculed; or it is supposed to produce the effect, which experience proves it to produce, by impression of abhorrence at the idea of swallowing a spider, or a spider's web. It is within my own experience to establish its claim to all the virtues that have been ascribed to it for the cure of intermittents; even to demonstrate, to the conviction of the most prejudiced, that it possesses virtues in allaying pains and spasms and other forms of irritation superior to opium or any known remedy—without connection with abhorrence; for, as given by myself, the patient has always been altogether ignorant of the nature of the remedy that was given to him. The knowledge of the virtue of cob-web in curing intermittents is old and vulgar; but, it was not until the beginning of the present century that I knew

CHAP. VI.

Introduction.

of it, and that experiment was made, under my own direction, which ascertains the fact—as to its virtues. It took place in the hospital of the army depot in the year 1801. Some cases of intermittent fever, the most of them the produce of foreign or aguish countries, had been long in the sick list of that hospital, obstinately resisting, or only temporarily yielding to bark, arsenic or mercury—singly or in alternation, administered with every possible attention to circumstances. The effect of cob-web,—a fact mentioned to me some short time previous by the late Dr. Gillespie of Edinburgh, occurred to me on this occasion. Perplexed by the obstinacy of the intermittents in question, I determined to make trial of it, and I directed that a quantity of the purest should be collected from the cellars of the hospital, and made into pills of four or five grains each —without communicating my purpose to any one. Four cases were selected for the experiment: to these four persons two pills were given with my own hand, at intervals of two hours, commencing six hours before the usual time of the return of the paroxysm. The pills acted like a charm: the paroxysm did not return, and health was actually restored—in some speedily, in others slowly. The effect was more than expected: and, as cob-web seemed to be a substance of power, cob-web pills obtained a place among the formulæ of the hospital pharmacy. According to the practice adopted at that hospital, the more ordinary formulæ were carried in a tray by a dispenser at the time of the visit,

History of Effect.

given when they were prescribed, and given under the eye of the person who prescribed; consequently an opportunity was thereby furnished of noticing the immediate and direct effect of their action. It was thus observed that, if cob-web was given as here stated, previously to the expected return of the paroxysm, the return was effectually prevented; if given after the paroxysm had commenced, the symptoms of distress instantly vanished and the patient speedily regained his usual state of health. It was further noticed that cob-web not only arrested the course of intermittents, but that it removed—almost in the manner of a charm, various forms of irritation, pain, spasm, delirium, vomiting, griping in the bowels and other threatening symptoms common in continued fever; such, at least, as were principally manifested on the sentient system and organs of loco-motion:—it was of no marked value where congestions or inflammations existed in the substance of internal organs.

I had been in the habit of prescribing cob-web from the year 1801, and had great dependence on its virtues in different forms of disease; but as it did not appear to me, in comparing substances, that the web, which is produced by the spider within the tropics, is the same with that which was employed in England, I included cob-web in the requisition for medicines for the windward and leeward island station for the year 1812. The Apothecary-General failed to procure it: the Director-General of the medical department of the Ordnance was

CHAP. VI.

more fortunate, or more industrious. He caused a considerable quantity of it to be collected—and he transmitted it to the Ordnance surgeon stationed at Barbados. Experiments were made in the hospitals of that island with what was thus obtained:—the results corresponded with what is stated above. The cob-web failed in no instance, as administered by the surgeon of the Ordnance, to prevent the return of febrile paroxysms of the distinctly intermitting type: it even rarely failed to relieve the more alarming symptoms of the remittent or continued, unless such as depended on deep congestion, or actual inflammation in the membranes or substance of internal organs. It failed in two cases, and in two cases only of distinct intermittent in the West-Indies—in so far as fell under my own observation. The subjects were both mulattoe boys: the one had contracted the disease at St. Lucia; the other, in the district near Montego Bay in Jamaica. It was given to the first without sensible effect; in the second, it was given and failed likewise; but the experiment was not very fairly made.

Failure.

I have stated briefly the introduction of the spider's web into medical practice—and noticed the general results of its action. I think I may venture to say that it prevents the recurrence of febrile paroxysms more abruptly, and more effectually than bark or arsenic, or any other remedy employed for that purpose with which I am acquainted: that, like all other remedies of the kind, it is only effectual as applied under a certain condition of habit; but that

Recapitulation of Effect.

the condition of susceptibility for cob-web is, at the same time, of more latitude than for any other of the known remedies. The cob-web was rarely given before the subject was prepared by bleeding, emetics or purgatives; and, given to a subject so prepared, it seldom failed to effect a cure comparatively permanent; relapse, or conversion into another form of disease being upon the whole a rare occurrence where the disease had been suspended by this remedy. If the cob-web was given in the time of perfect intermission, the return of the paroxysm was prevented; if given under the first symptoms of a commencing paroxysm, the symptoms were suppressed, and the course of the paroxysm was so much interrupted that the disease for the most part lost its characteristic symptoms. If it was not given until the paroxysm was advanced in progress, the symptoms of irritation, viz. tremors, startings, spasms and delirium—if such existed as forms of febrile action, were usually reduced in violence, sometimes entirely removed. In this case, sleep—calm and refreshing, usually followed the sudden and perfect removal of pain and irritation. Vomiting, spasms and twisting in the bowels, appearing as modes of febrile irritation, were also usually allayed by it: there was no effect from it where the vomiting or pain was connected with real inflammation or progress to disorganization. In cases of febrile depression, deficient animation and indifference to surrounding objects, the exhibition of eight or ten grains of cob-web was often followed by exhilara-

CHAP. VI.

tion;—the eye sparkled; the countenance assumed a temporary animation; and, though the course of the disease might not be changed or the dangers averted, more respite was obtained from a pill of cob-web than what arises from, or belongs to the action of wine, opium, or any thing else within my knowledge.

Further, the power of cob-web has been tried, and its good effects have been proved in other forms of irritation besides those that are strictly febrile. In spasmodic affections of various kinds, in asthma, in periodic head-aches, in general restlessnesses and muscular irritabilities, its good effects are often signal. The cob-web gives sleep, but not by narcotic power:—tranquillity and sleep here appear to be the simple consequence of release from pain and irritation. Cob-web has also been applied locally, —under my own eye, to ulcerated and irritable surfaces with singular good effect. At first, the pain which it occasioned was sharp,—but it was momentary; and the surfaces, which had been painful, irritable and untractable to other applications for weeks or months, were healed up in the course of two or three days at farthest:—the experiment was made on superficial sores only.

I have not made a chemical analysis of the substance in question; for my chemical knowledge is not of the kind which would enable me to conduct the operation correctly. The cob-web may perhaps be thought to belong to the class of poisons; but it is somewhat singular that I have not been able

to discover much difference of effect from a dose of ten grains and from a dose of twenty. The changes induced on the existing state of the system, as the effect of its operation, characterize it as powerfully stimulant. 1. Where the pulses of the arteries are quick, frequent, irregular and irritated; they become calm, regular and slow—almost instantaneously after the cob-web has passed into the stomach: the effect is moreover accompanied, for the most part, with perspiration and perfect relaxation of the surface. 2. Where the pulses are slow, regular and nearly natural; they usually become frequent, small, irregular,—sometimes intermitting. 3. Where languor and depression characterize the disease; sensations of warmth and comfort are diffused about the stomach, and increased animation is conspicuous in the appearance of the eye and countenance. 4. The cob-web, applied to a bleeding surface, occasions a very sharp and transient pain:—the bleeding instantly ceases.—The cob-web here recommended is the produce of the black spider which inhabits cellars, barns and stables: that which is found upon hedges in autumn does not possess the same power, if it be actually of the same nature.

Quality and Mode of acting.

O. *Blisters.*

Vesication of the skin by means of Cantharides has long had a place among remedies employed for the cure of fever; but the mode, through which the effect is attained, is not yet so explained by theorists

CHAP. VI.

as to imply a consistent or uniform rule for the direction of the practice. The superficial irritation of a blister often diminishes the force of a deeper internal irritation,—consequently the remedy acts sedatively; in other cases, it produces an excited effect throughout the system,—consequently the act is stimulating. The ostensible effect is thus two-fold: the basis of action is one. The existence of local pains—deep or superficial, and the depression of vital power from oppression or exhaustion, seem to be the two general conditions which influence practitioners in the application of blisters. The benefits are decided if the habit be susceptible; they are void if susceptibility be deficient. For example if, together with internal local pain, there be high fever, a strong, hard and irritated pulse, a dry, thick and constricted state of the surface;—or a damp, greasy and deficiently animated skin, the effect of blisters is equivocal—not always safe. The effect is also equivocal where the principal action of the disease manifests itself in the interior structure of spongy organs, viz. brain, lungs, liver or spleen; it is more certain, and often more favourable where chiefly directed to act on excretive membranes, particularly the mucous. Blisters are often applied as a last remedy in what is called the sinking state of fever; but they often fail, consequently lose credit,—and they lose it unjustly, in as much as they are applied to a case beyond remedy in itself, or irremediable in neglect of preparation. The physician who observes, and who reflects on what

Conditions of Subject.

he observes, will be at no loss to determine what form of preparation is most suitable to the individual case before him, prior to the application of the blister, viz. whether bleeding, emetic and other evacuation, or bathing, friction and internal cordial, the preparation consists in rendering the habit susceptible generally. This is done by moderating or removing internal congestions, or irregularly excited organic actions; and further, by exciting the sensibility of the skin to which the irritating substance is applied.—The view, by which I am myself directed in the application of blisters, is merely stated in this place: it does not perhaps altogether correspond with that of others.

Instead of applying blisters with a view to moderate symptoms and diminish dangers, I often apply them with a view to prevent the recurrence of dangers that have been removed by previous treatment; or that recur periodically as a condition in the character of the disease. For example, after the course of the more violent of the continued fevers—simple, or complicated with local pain, has been arrested, the pain removed, and the habit rendered susceptible throughout by bleeding, bathing or other means, the application of a large and strong blister to the nape of the neck, to the temples, head, breast or sides according to the circumstances of the case, has been a practice with me for a long time past; and I have cause to consider it as an important one, —preventative of recurrence—and thereby effective of cure. I have also been in the habit of apply-

Rule of Application.

CHAP. VI.

ing strong blisters to the nape of the neck, to the temples, to the wrists, to the ancles, or to the inside of the thighs, about six hours or more, before the expected return of the paroxysm of fevers of a suspicious or treacherous nature. I do this in the view that the system, as brought under artificial impression by the action of the blister at the time of the customary return, may be less susceptible of the impression of the disease, at least of its dangerous tendency if it actually do return. The trial was made originally through a suggestion of theory;—it has answered expectation in practice. In the more advanced stages of fever, where the powers of life are impaired, whether through exhaustion, or by oppression, blisters, applied to one part of the body or other, usually have a place among the prescriptions of physicians. On this head I may remark that, if the action be equally balanced throughout, only deficient in force generally, the energy is for the most part perceptibly increased by the stimulation of a blister; and moreover, while increased, it is longer sustained by such form of stimulation than by ordinary internal cordials. On the contrary if, together with expressions of languor and debility, there actually exist congestions in the substance of internal organs, the stimulation of the blister rarely does any good. It irritates, and even sometimes actually adds to the danger and obstinacy of the disease if applied as the case presents itself,—applied, after preparation suited to circumstances, it is available on most occasions. I am disposed to consider blisters

as cardinal means of safety against the recurrences of treacherous fevers; and, it has appeared to myself that they are most effectual for that purpose, as applied to the nape of the neck extending down the spine—to the head—behind the ears—and to the temples; for the removal, or for the prevention of the recurrence of local pain—to the seat of the pain, or as near to it as possible; and, for purposes of general stimulation—to the inside of the thighs, the calves of the legs, ancles and wrists. Wherever it is necessary to apply blisters, it is proper previously to wash the skin with vinegar, or spirits of some kind or other: if the skin be torpid, a solution of volatile alkali will be more effectual. I confide in the early application of blisters for the prevention of recurrence, where the course of fever has been previously arrested; and, as I have practised the experiment myself with good effect, I cannot abstain from recommending to others that, where the fever is of a suspicious character, blisters be applied in succession every other day until the usual periods of recurrence be past, and the signs of re-established health confirmed:—they are means of safety of no ordinary kind.

P. *Antiseptic.*

The greater number of the remedies which have been noticed in the preceding pages are such as effect changes in the existing state of things by diminishing quantities, or stimulating to new forms of

CHAP. VI.

action by forcible impression: there is another class which seem to act by inducing changes on the condition of the fluids within the body, independently of expulsion or evacuation—some of which I shall now consider. Among the number may be reckoned yeast. *Yeast* has been given in certain forms of fever to great extent; and, according to some reports, with great benefit. I have myself often seen it tried in the hospitals which were under my superintendence, sometimes with advantage, but never with such advantage as in any degree justified the praises which were bestowed upon it. The *Essence* of *Spruce*, which ranks itself in the same class, has also had its day of fame. It was considered at one time, particularly among sea-faring people, to be almost a specific for the cure of the yellow fever of the West-Indies; but its credit was not established by correct experiment. If given at the very commencement, or given in very slight forms of fever, it often acted as a purgative, sometimes as a diaphoretic—and health was restored in consequence. In severer forms, or not given until late stages, no benefit whatever was obtained from the largest doses of it. The *Mineral Acids*, and among these, the *Muriatic* stand frequently among the prescriptions of physicians as a remedy in fever; and, in certain conditions of fever, particularly in the gastric and infectious, it is a remedy of great value; but, my own experience of it is not so extensive, or my observations on the subject so precise that I can pretend to give any new information on the subject.

Yeast—character.

Spruce—character.

Muriatic Acid.

The *Powder of Charcoal*, which has lately been noticed as a remedy for the cure of intermittent fever in the Mediterranean, may be ranked in the antiseptic class of remedies—and it holds a distinguished place among them. It came to my knowledge, in the year 1813, that charcoal had been employed in Sicily as a remedy in the intermittent; but, as I did not know the quantity to which it might be given with safety or without inconvenience, I ascertained the point by experiment on my own person. I mixed a tea-spoonful of the powder—about twenty grains in a glass of pure water, and swallowing it, instead of inconvenience, I felt a pleasant and soothing sensation as soon as it reached the stomach. Convinced by this experiment that the powder of charcoal, as taken by the mouth, was a safe and not a disagreeable substance; and, reflecting on the changes which it produces upon ill conditioned ulcers, as well as on the effect which it is commonly known to possess of restoring spoiled meat to sweetness, I resolved to make trial of it in the dysentery which was the most prevailing disease in the military hospitals at Barbados at the time. The first experiment was made upon a soldier of the Royal Artillery. He was an athletic man; and, as the symptoms were violent, he had been bled to considerable extent, and was, at the time, under a course of calomel and opium: the disease still went on; the evacuations were frequent and small,—mucous with mixture of blood,—the tenesmus so intolerable that he could not remain ten minutes in bed

Dysenteric Forms.

CHAP. VI.

at a time:—the distress in fact was great. In this state of suffering, twenty grains of powdered charcoal were given in a glass of rice water, and one drachm, mixed in a gill of the same water, was thrown up by clyster. The relief was instant and perfect;—and, returning at an interval of two hours with a view to satisfy myself of the result, I found him without pain, tenesmus or other unpleasant symptom. The tenesmus had been most distressing, and the direct relief from its torments was ascribed by the patient himself to the clyster. From the good effect of the powder of charcoal, as given in the case alluded to, I thought it my duty to recommend a trial of it in other similar cases which were then in hospital. The effects were similar; and the virtues of the remedy seemed to myself to be so well established, in certain stages of the dysenteric form of fever, that I communicated the discovery to the principal medical officers of the different stations within the command, requesting at the same time that trial might be made of it and the results reported at the office of Inspector of hospitals. The reports transmitted were generally favourable; but not so uniformly favourable as I had anticipated, partly owing, it is presumed, to the following circumstance. At Barbados, there were rarely any other than recent cases of dysenteric fever; in the islands, there were many of long standing and of complicated form,—and in these it did not appear to be uniformly beneficial.

CHAP. VI.

Rule of Administration.

1. Where the dysenteric form of fever is recent, and where the mode of action is simple, that is, chiefly manifested on the secretions of the mucous membrane of the first passages, the powder of charcoal given by the mouth, or, where tenesmus is urgent, administered by clyster, affords immediate and effectual relief.—The effect is soothing and pleasant beyond the effect of common remedies: the excess of the evacuation is not only restrained, but the matter of it is changed—from blood and mucus, putrid and offensive to figured feculence. With proper attention to circumstances of management, the health is usually re-established securely in the course of two or three days. If the action of the disease be prominent locally—with urgent tenesmus, the powder is to be mixed with rice water or thin arrow root, in the proportion of a drachm to a gill, and injected by clyster: if the action be more equal throughout the whole of the alimentary canal, the charcoal is to be given by the mouth to the quantity of twenty grains in a glass of rice water—sometimes with the addition of six or eight grains of rhubarb and three or four of ipecacuanha. It is to be repeated at intervals of four hours; and, so repeated, it rarely fails of giving immediate ease; even of effecting, as observed above, a permanent cure within three days. 2. If the disease be complicated, that is, if the peritoneal coat of the intestines or any of the more distant organs within the abdominal cavity sustain a material part of the morbid action, the exhibition of the powder of char-

CHAP. VI.

coal, whether given by the mouth or by clyster, has no more than a partial effect, if it have any effect at all. In this case, the complicated condition is to be reduced to simplicity by bleeding, bathing, blistering or other means suited to the circumstances; and, when that is done effectually, charcoal resumes its place as a remedy for what may more properly be termed dysentery. 3. Where the dysenteric disease has been of long standing,—the evacuations thin and watery, the tongue red and dry—smooth and glossy with a blush of erysipelas, the benefits of charcoal given by the mouth or by clyster are very insignificant. I have no just grounds to say that charcoal is hurtful in such case; but I cannot say with confidence that it is useful. 4. Where the disease has been of long standing, and where the structure of the coats of the intestine has been materially changed by its continuance, the powder of charcoal is sometimes beneficial, sometimes of no value. For example, where there is ulceration in the rectum and lower parts of the colon, the stools bloody, foul and putrid, the injection of the powder of charcoal by clyster never fails to give relief; it even sometimes effects such material changes on the diseased surfaces as lead to a permanent cure. On the contrary, where the chief seat of the malady is in the superior part of the colon which the injection does not reach; or where there are grounds to believe that the structure of the intestine has become a mass of congestion, and

hat the congestion extends to the mesentery, the benefits of the powder of charcoal, whether given by the mouth or by clyster, are so uncertain that they cannot be estimated. 5. Powder of charcoal, given by itself or with the addition of a few grains of powdered rhubarb, has appeared to myself to be a remedy well adapted to the bowel complaints of children, and even to the diarrhoeas of grown persons,—more especially to such as occur in the autumnal season. The first dose generally gives relief; a second or third, for the most part, effects a complete change in the nature of the evacuations. It is however to be borne in mind that it is only where the disease is of a simple character, and where the action of it is chiefly manifested on the mucous secretion that the result is so fortunate as it is here stated to be.

It was mentioned above that the powder of charcoal was employed in Sicily as a substitute for bark in the cure of intermitting fever. Some trials were made with it in this form of disease in some of the islands of the Windward and Leeward island station; but without adding to its credit. The sum of the reports prove that, where the form is pure and simple intermittent, no material benefit ensues; that where the type is remittent, the form bilious or gastric, the symptoms dysenteric, the evacuations mucous, accompanied with anguish at stomach, nausea, flatulence, vomiting, &c. the good effects are signal:—the distressing symptoms are not only removed, but the disease itself is arrested and often finally cured.

CHAP. VI.

Stomach Complaints.

Besides the beneficial effects of the powder of charcoal in dysentery and gastric fever, the power which this substance possesses of rectifying the vitiated secretions of the stomach, whether connected with acute disease or chronic malady, deserve to be noticed in this place. Vomiting is often a distressing symptom in the fevers of the West-Indies; and, where it proceeds from actions which produce diseased secretion as a prominent effect, the powder of charcoal, either singly or given in conjunction with the effervescing draught, is singularly successful in restraining it,—even in removing it. It is however of no avail where the vomiting and nausea are connected with irritations in the sentient system,—symptoms of unknown modes of action in the substance of the brain; but it is eminently useful, either alone or mixed with some grains of rhubarb, in diminishing or removing flatulencies, sicknesses, nausea, crudities and other unpleasant sensations at stomach,—such for instance as are more or less connected with vitiation of the secretions.

The above remarks on remedies have extended far beyond what I had in view, when it first occurred to me to allot a separate chapter to the consideration of their history and effects. I cannot pretend to say that I may not have dilated too much upon the subject; I am sensible particularly that I have not sufficiently compressed the history of the introduction and effects of remedies that I have myself endeavoured to bring to the notice of the public. But, however that may be, the observations

now made will serve to facilitate and often to supersede the necessity of detail in the application.—The first point in undertaking the cure of fever or any other disease, consists in discriminating the condition of the disease precisely, that is, the actual state of the morbid action; the second—and it is not less essential, consists in ascertaining to what extent the means, termed remedies, are capable of acting on the habit so as to change the base of the diseased condition, and to open chances for the renewal of that which is healthy. The cure of disease rarely consists in a simple process of one operation. One remedy carries the process one stage only; another, or perhaps two more may be necessary to carry it to the point of health: hence, the end is only attained through a series of successions; and hence, the propriety of considering the power of remedies separately, or as acting on their own bases only.

CHAPTER VII.

Cure of general Fever.

CHAP. VII.

IT is not possible, in defect of properly digested sick returns, to estimate with precision the merits of the different modes that have been resorted to at different times, by different practitioners, for the treatment of acute diseases. The materials, to which we have access, do not warrant a confident conclusion, whether Paracelsus, Van Helmont and Sylvius de la Boe on one part; or Galen, Botalli and Sydenham on the other were the most successful practitioners. They all claim a success beyond that of their predecessors; and, as the author of a practice may be supposed to act under the guidance of a principle, it is reasonable to conclude that he acts with more effect than his follower who, not viewing the subject with his own eye, acts in routine on precedent only. From the best information that can be obtained

respecting the history of febrile disease and relative mortality in British fleets and armies, during the last sixty years, the fact, whether the medical art is progressive, retrograde, or stationary, stands on very questionable ground. The sick of the military did not die in greater numbers in the hospitals that were established in Germany and Holland in the wars 1742 and 1756 than they did in the war 1793, —94 and —95; or than they did in the war 1803, viz. on the island of Walcheren in the year 1809. Further, there are no just grounds to conclude that mortality was greater, *cæteris paribus*, in North-America in the war 1756 than it was in the revolutionary war of 1775, or in the late war of 1813. Mortality among European troops has always been great in the West-Indies, especially among those newly arrived, or contingently exposed to field service;—and it has been nearly equal at all times, viz. in the war 1756, in the war 1778, the war 1793, and the war 1803. The proportional mortality is low at present; but the decrease is only of recent date; and it would not be safe to pronounce positively, whether it be owing to improvement in medical management with improvement in military economy, or to contingent and temporary changes in the nature of morbid causes producing a less aggravated form of disease than belonged to former times.

The limit, assigned to the present work, does not permit me to enter into detail of the principles and and practices of preceding writers on the subject of

CHAP. VII.

fever. I shall therefore content myself with stating what belongs to myself. My view is of two characters, viz. absolute and decisive; or auxiliary and temporizing only. The first proceeds on a presumed knowledge of the nature of the morbid cause, at least of its primary operation; consequently the medical act, as decisive of effect, is directed to subvert the basis of that operation and to establish a cure by force. The purpose is attained, or it is attempted to be attained—at one time through abstraction, at another through addition, viz. depletion or stimulation—singly or in alternation. Common practice rarely offers examples of scientific combination of the modes. The advocate of depletion adheres to depletion; and the advocate of stimulation trusts in stimulation at all times and in all circumstances. Where that is the case, the practitioner does not become wiser by experience, for he sees things only through the medium of his own preconceived opinion. The second or auxiliary rule ventures no farther than to act on symptoms. It admits of means which diminish dangers; but it leaves the disease to pursue its course according to the law of its own constitution, either to terminate by critical perspiration, or other less obvious mode, as may be:—It is however the more usual rule; for it best coincides with the prejudices of the patient and the interest of the professors of the art.

Rule of Practice.

Having premised these cursory remarks, I shall now state concisely—and as clearly as I can, the principle and practice to which I adhere in comba-

Practical View of the Author.

ting the various forms of acute diseases, more particularly of the acute diseases which appear among British soldiers in the West-Indies. The plan is different from the more common routine,—not so much in the means applied as in the principle which directs the application. As I consider fever to consist in changed organic actions—not indeed always changed after one manner, but always changed from the usual tenor of health; so to institute a plan of cure consistently with the theory, which common observation and common sense pronounce to be a fact, I am necessarily led to the measure of forcibly arresting the course of the disease by strong means, wherever such arrest is practicable and safe; and further, when that is effected, of soliciting, by suitable stimulation, a train of action analogous with the action of health—so as to effect recovery. According to this view of the case, nothing is left to nature. Disease is an enemy in all its presentations, not to be repulsed from the citadel merely,—it is to be attacked and totally destroyed on the outwork; and this I conclude, will be the object with the provident and bold physician. The object is practicable and safe in most cases of recent fever of the progressive form; it is not always certain, and it even may not always be safe where the disease is in progress, either where the structure of important organs has been already materially violated, or where the febrile process has nearly attained a period of critical termination:—it is not safe without modification in the retrograde.

CHAP. VII.

The system of practice, which I have adopted myself and which I now recommend to others for consideration, comprehends a combination of means which, on the first view of the case, may be deemed inconsistent, but which an intimate view of the subject proves to be analogous, at least to conspire to one purpose and to bear upon one ultimate point. The means to which I allude are abstractions and additions, or depletion and stimulation alternated. It is on the properly adjusted, and well-timed management of alternated depletion and stimulation, that the disruption of the chain of febrile action and the restoration of action to its customary and healthy movement evidently depend. Knowledge, sufficient to adjudge and adjust depletion and stimulation in their places, constitutes the physician sovereign in the cure of recent fever; in as much as it establishes him on the field of action with all his engines in force, and with little risk of erring in the rule of applying them. It is different where the disease is advanced, or where it has attained the later stages of its course. Depletion and stimulation to a great extent are not then always practicable or safe. The boldest and the most skilful must, in such cases, be sometimes satisfied to act on secondary ground; that is, to avert imminent dangers, to repair local injuries, and to leave the result to the critical operation of nature.

But on whatever ground the physician may act, primary or secondary, it is imperious and indispensable to success that he keep the precise history and

condition of the patient always under view; that he actually attend to the exhibition of remedies, and that he judge the result of the application of the more powerful ones, viz. bleeding and bathing, by direct ocular inspection. The base of the practical view, viz. the subversion of diseased action is one throughout; but the conditions of the subject are so varied that the precise result cannot be anticipated from the effect of a general prescription.—In accompanying the author of the present sketch through the detail of cure here given, the reader is requested to estimate, with care and precision, the temperament of the individual subject—whether sanguine, phlegmatic, or serous; the disease, whether acting equally throughout, or more especially prominent in one organ or in a series of parts; the act, whether progressive or retrograde; the relative force and rate of progression, whether to a favourable or fatal termination.

A. SECTION I.

Cure of Fever in the Sanguine Temperament.

1. The milder form of continued fever, as manifested on the sanguine temperament, often terminates spontaneously, or changes form at a given period, most commonly on or before the seventh day, and generally on an odd day, viz. one of the reputed days of crisis. The termination of this form of fever is rarely fatal, though nothing of con-

CHAP. VII.

sequence be done by the physician in counteraction of its tendency; but, as it is not prudent to leave the cure of a disease to chance or nature, while there are grounds to believe that it may be speedily and safely cured by art, it is proper that blood be drawn from the arm to the extent of one or two pounds—or more as the case may be, the operation being so conducted in its management that an arrest, or subversion of the diseased action be thereby assured. This is usually indicated by relaxation of the skin, abatement of head-ache and other pains, reduction of the velocity, force and tension in the pulses of the arteries—even sometimes by actual fainting The blood is to be abstracted while the patient is in a recumbent posture, whether he be placed on a couch, on a bed, or in the warm bath; and, when the course of the disease has been broken by the means stated, the affusion of cold water on the head and shoulders from a bucket, or by means of a sponge according to the circumstances of the patient and the temperature of the water, rarely fails to extinguish every remains of disease:—it even excites a form of action analogous with the action of health,—and thus establishes recovery. The cure of fevers of minor force is generally assured by the means stated, if applied with force and with discretion; but, in order to render the effect sure, or to preclude chances of recurrence, it is advisable to apply a blister to the nape of the neck and between the shoulders—even to the temples, if there be pain in the head, or if the pain of the head had

Common Mode of Cure.

been severe previously to bleeding and bathing. There sometimes occur conditions in this form of fever which may seem to require the aid of an emetic, but they are not very common. If the tongue be foul, or covered with tough slime they are useful; —and if useful, it is proper to premise fifty or sixty grains of kali, dissolved in a pint of tea, or other liquid, prior to the exhibition. It is customary, with most British practitioners, to give purgatives or laxatives of some kind or other in the early stages of fever. If the course of the disease has been broken by the means here recommended, the practice is safe. It conduces to render the effect more secure; and of the forms employed for the purpose, an infusion of senna with a portion of soluble tartar, and a greater or lesser proportion of antimonial wine, or acetated water of ammonia may be considered as one of the best,—effective and extensive in its operation as thus compounded and as given in divided doses. It rarely happens that any thing further is necessary in the way of medicine; and it may be presumed that, with occasional ablution of the whole body with cold water, frequent changes of linen, gestation in the open air of more or less duration, a form of diet—small in measure, but prepared with care and suitable in kind to the existing condition, the patient may return to his duty, or ordinary occupation in seven or eight days at farthest in the full vigour of health.

The means alluded to are generally decisive as employed at the commencement; but, if the dis- In Progress.

CHAP. VII.

ease has been of two or three days standing before it is brought under the eye of the physician, though the same course of proceeding is still to be adopted, it is to be adjusted with more circumspection, at the same time that it gives less promise of certainty in the result. The quantity of blood to be abstracted at one time must here be carefully regulated by circumstances which arise in the course of the operation, viz. remission from pain and comparative freedom in the ordinary offices of secretion and exertion.—When this point has been gained, bathing—warm and cold bathing alternated, is often decisive of cure. If the force of the disease be broken, or its course arrested by the means now recommended, the application of blisters to the nape of the neck and between the shoulders—with small repeated doses of calomel and James's powder, Dover's powder, or aq. ammon. acet. are generally useful in preventing recurrence:—if recurrence be prevented, health is for the most part re-established before the expiration of the first seven days. If the disease has attained the fifth day, or if it be even more advanced before it is submitted to medical treatment, bleeding, purgatives of severe operation, or other remedy calculated to make strong impression, and thereby to occasion sudden subversions, are not advisable—at least if the movements of the disease proceed in a regular train toward crisis. Little is then required to be done,—and more cannot be done with propriety than to facilitate the movements of crisis by fomentation of the extremities with flannels wrung out of

hot water, by gentle diaphoretics, James's powder or other antimonial, the admission of pure air into the apartment—aided by suitable drinks and occasional cordials. But if symptoms present themselves, even at this advanced period, which threaten danger to life, or violence to the structure of important internal organs, the dangers are to be obviated by suitable and decisive remedies, viz. bleeding to extent —without any regard to expectations from the effect of impending crisis.

The form of fever now under consideration frequently terminates favourably and finally, when left to itself, on the seventh day or earlier: it also sometimes continues fluctuating under different changes of form for weeks, even for a month or more. But, besides fluctuations under the same radical character, it also on many occasions changes about the fifth or seventh, assuming at such period a new course or new basis of action. In this manner, it changes from progressive to retrograde, still continuing on the sanguine or humoural base; or, from sanguine or humoural, it moves to another series or system, viz. the sentient—usually termed nervous.—Gestations in the open air in spring carriages or other vehicle, frequent ablutions with sea water, or water in which a quantity of salt has been dissolved,—rubbing of the body with rum or brandy, vinegar and salt, or salt and lime-juice;—and internally, bark, muriatic acid, wine, cyder, bottled porter,—changed and combined as circumstances suggest, are the remedies of principal dependence in the re-

Late Stage, or Retrograde.

CHAP. VII.

trograde form of disease. In the other case, viz. where the morbid action is transferred to and manifested on the sentient system almost exclusively, whether manifested in the intellectual function by mental alienation, or in the external locomotive by excessive mobility, viz. tremors and faintings, or excessive irritation—starting, spasm, and convulsion, the most efficient means of moderating or removing the suffering—where a mode of general febrile action only, appear to myself to be found in opium, singly or in combination with others, viz. antimonials, blisters, warm bathing, or fomentations with flannels wrung out of hot water. These are the means; but it is often difficult so to adjust the application of them as to obtain the precise effect that is expected from them. If we trust in opium as the chief remedy, it behoves us to facilitate its operation by removing, in so far as we can, every contingent impediment that lies in the way, or that may be supposed to lie in the way of its free action. This is done by the judicious employment of antimonial, of blisters, of bathing, and of fomentations. It is observed that opium sometimes suppresses delirious wanderings of the minor degree, sometimes moderates furious excesses of delirium, sometimes obviates excessive irritability, manifested by startings, spasms and convulsions, sometimes blunts excessive mobility, manifested by tremors, faintings, &c. and sometimes gives confidence and firmness to the mind from the agonies of fear and despondence. As the ostensible effect in these modes

of operation is different or opposite, it cannot be otherwise explained, than by supposing that opium possesses a power of absorbing (if one may use the expression) the febrile action in the action that is peculiar to itself. The peculiar action of opium is thus supposed to supersede the action of the disease; but the auxiliary means mentioned above are necessary to give success to the effect. Opium fails alone: it succeeds in combination; but it only succeeds where the morbid act fluctuates as a temporary transfer to the sentient system generally,—not where the act is complicated with, or dependent upon local or permanent injury of the primary organ of sense and intellect.—Besides opium, the spider's web has often been given by myself in conditions similar to those noticed above with singular benefit,—I am warranted to say with more decisive effect than is ordinarily obtained from the other with all the extra aids that can be given to it.

Where periodic fever of the minor degree of violence exists under the predominance of the sanguine temperament, the rule of treatment is simple, and the effect for the most part is calculable.—I have nothing to add on the subject of the regular intermittent beyond what is commonly known; and I only observe of the remittent that, after proper preparation, the Peruvian bark is to be given in doses of forty grains or one drachm every third hour during the remission. The quantity of forty grains, or one drachm, every third hour is sufficient to prevent the untoward occurrences that happen

CHAP. VII.

not unfrequently about the sixth or eighth day where such means are neglected. No quantity, in so far as my own experience goes, is sufficient to arrest the course of the disease in the midst of its course—the remittent proceeding through the regular process of coction, and terminating by regular and distinct crisis at a critical period in spite of bark administered largely and regularly in time.

Concentrated Form.

2. The first step, in the cure of the concentrated form of the sanguine temperament as submitted to the care of the physician within twelve hours from the attack, consists in subtracting blood from the arm by the largest possible orifice, in quantity sufficient, whatever be the amount of the pounds, to produce relaxation of the surface and other organs of secretion—to effect a change in the condition of the pulse—remission from pain—or ease and freedom in the exercise of the functions,—in fact, a total subversion of the base of the diseased action. A smaller quantity than three pounds will rarely produce this change: six have not been more than sufficient on some occasions; but, whatever the quantity may be, we are to bear in mind that we do little or nothing in the case if we stop short of the effect here alluded to. Where the head-ache is particularly intense,—pain darting through the head with throbbing at the temples—the eyes hot and inflamed —with other marks of excited action in the exterior membrane of the brain, the temporal artery is to be opened in preference to a vein in the arm;—for, in the case stated, the quantity of two pounds of arte-

First Stage.

rial blood from the temples is often more effectual than four from a vein in the arm. When the course of the disease is changed, or arrested by subtraction of blood, whether from the temporal artery or from a vein, the patient is to be placed, with due attention to circumstances, in a warm bath of a temperature agreeable to the feeling, viz. from 92 to 96 of Fahrenheit's thermometer. The head is to be raised somewhat high, the limbs and body entirely covered by the water, the body rubbed with soap and scrubbed with brushes—until all impurities be removed and the whole of the skin be animated by the scrubbing and warmth of the bath. The benefits of the bath, if the view go farther than personal purification, cannot be obtained in less than half an hour.—It will be advisable that the head, at least the fore part of the head and temples be shaved while the body is immersed in water; and, if any pains or uneasinesses of any kind remain after all the discipline here alluded to has been submitted to, it is recommended that the bandage be removed from the arm and that the blood be allowed to flow, under the eye and even under the touch of the physician, until the object in view be attained. When the course of the disease has been broken or arrested by the means stated, no signs of local congestion or internal disorder being cognizable, the body is to be raised up, placed upon a stool within the bath, cold water to be poured upon the head and shoulders—gradually and sparingly by means of a sponge, or suddenly and profusely from a bucket or large vessel

CHAP. VII.

as judged most suitable to the circumstances of the case. This part of the process being finished, the patient is to be laid upon a couch, wiped dry and clothed according to rule, viz. shirt, night-cap and gown, and conveyed to the allotted ward. As soon as he is properly disposed in bed, one blister is to be applied to the forehead and temples, another to the nape of the neck extending down the spine to the interval between the shoulders; and it is further recommended that, in case of nausea and disagreeable sensation at stomach, one be also applied to the pit of the stomach;—the parts to which the blisters are applied being rubbed with hot Cayenne vinegar, or spirits—previously to the application.—The process I have now stated constitutes the ground work of the cure. I consider it to be a secure one; but it will be proper to aid and confirm the effect by other means. Purgatives of one form or other contribute materially to the purpose; and jalap and calomel—with a few grains of James' powder made into pills for the convenience of administration, answer as well as any one that can be contrived. Dilution with tea, whey, or other agreeable beverage contribute to the effectiveness of the purgative operation; and the addition of more or less of the acetated water of ammonia facilitates the effect and renders it more extensive. If there be irritability at stomach—with erysipelatous appearances about the fauces, camphorated mixture with zinc, nitre and alum,—even dilute solution of sugar of lead swallowed gradually has, according to my own observation, often dimi-

nished the irritability, apparently checked the erysipelatous progress, contributed materially to the comfort,—and probably assured the safety of the patient's life.

The cure of the most concentrated of the fevers of the West-Indies, even of that form which left to its own course or feebly opposed by art terminates by jaundiced yellowness and black vomiting within the fifth day, has appeared to myself to be a matter of almost calculable certainty, where the means here recommended have been applied to sufficient extent—applied in their places and applied within twelve hours from the first attack. After twelve hours have elapsed, that is, after the first paroxysm, or tumult of invasion has subsided, the result is less certain, for it happens not unfrequently that the tumultuous action of the paroxysm commits violences on the structure of internal organs which renders the effect of remedies void or imperfect. I therefore speak with less confidence of the power of remedies, in the period which follows the decline of the first tumults to the beginning of the third day, when the case is usually decided—either favourably or fatally. If the patient be submitted to medical care in this interval, (the symptoms as described at page 52,) it is recommended that he be placed in a tub of warm water of a temperature agreeable to the feeling—that the head be raised high—that the forepart of the head and temples be shaved—that the body be immersed to the chin—that the limbs be rubbed with soap and scrubbed with brushes—and that

In the Progressive.

CHAP. VII.

the abdomen and sides be pressed and agitated during the rubbing. When impression has been made by this form of discipline, the sensibility of the surface being thereby increased, and the sluggish or oppressed venous circulation more or less animated, a vein is to be opened in the arm, the effect produced by the flow of blood being carefully watched—with a view to farther proceedings. If the blood flow freely; and if the pulse, from sluggish and concentrated, become quick, frequent and expansive, a favourable result may be anticipated,—either from the mere effect of the remedy, or from the condition which it induces preparative of the effect of other remedies. It is not safe in this case to define quantity from preconceived opinion; but it will not be advisable to go beyond two pounds at the first trial. The object is not to attempt to arrest the course of the disease abruptly by strong measures,—for in that there may be danger, but to move and agitate—advancing step by step until a position be gained, from which a bold proceeding may be attempted without fear of doing harm. Impressed with this idea, I generally recommend that, after blood has been abstracted to the quantity specified, the patient be allowed to remain in the bath for fifteen or twenty minutes, that the limbs be again rubbed with soap and brushes,—the abdomen and sides pressed and agitated by pressure. If the patient be languid or disposed to faint, wine or other cordial is an obvious and necessary remedy. After recovery from languor and a re-examination

of the real state of things, the vein is to be re-opened —if there be cause, that is, if the relief be not perfect. When the vein is re-opened, the blood is to be allowed to flow under the eye, and even with the finger of the physician on the pulse,—to the greatest warrantable extent. A change of circumstances is the object in view, viz. a removal of internal congestions—followed by restoration of susceptibility to ordinary impression. When that has been done, the patient is to be raised up and placed upon a stool within the bathing tub, cold water being affused upon the head and shoulders as he sits upon the stool—copiously or sparingly according to the circumstances of the case. The whole of the processes connected with bleeding and bathing being finished, the skin is to be wiped dry, rubbed with hot flannels, afterwards with warm olive oil, or other more stimulating liniment, the temples, nape of the neck and pit of the stomach covered with strong blisters. Infusion of senna, with a portion of kali, æther and acetated water of ammonia, is to be given at intervals as a purgative; or in preference, if the bowels be torpid and the stomach squeamish, purging tincture of aloes and myrrh with the addition of an ounce or more of rectified oil of turpentine. With the addition of turpentine, the tincture of aloes operates speedily and efficiently,—and it is less liable to be rejected than less nauseous drugs. Sage tea, saffron tea, or snake-root tea with acetated water of ammonia are recommended to be given freely during the

CHAP. VII.

operation of the purgative. They conduce to the extension of the effect and to render the benefit more permanent.—If relief has not been obtained from the process now stated, as executed in all their extent and in proper succession under the eye of the physician, gestation in a spring carriage in the open air, refreshing drinks and cordials, and frictions of various kinds may still do something:—they may save or prolong life; but it is not expected that they will speedily and abruptly cut short the disease:—recovery, if it do take place, will probably be slow and liable to accidents.

The various processes, which are here detailed, are to be executed under the eye of the person who has the responsible charge of the patient's life; for, as the success of the effect depends upon the just application of the means to the end, and, as that comprehends a series of successions and alternations somewhat complicated in appearance, the end cannot be attained, or it will be only attained through chance, unless the principle be fully understood by the prescriber and applied in all the steps of the operation under his immediate direction. Such is the importance of time and circumstance that the same general means, which succeed with one physician, frequently fail with another, in as much as the one either does not conceive the principle on which means act, or does not take the trouble to attend minutely to time and circumstance in the application of them. If the physician be desirous to save the life of a patient from the perilous state

of disease here described, he cannot expect to put all his engines in a fair train of operation, for accomplishing the purpose, in less than two hours of close attention to administration. This is a sacrifice which few make,—for they do not sufficiently estimate its importance; but, if they do not make it, they must not be disappointed if they fail in doing what they promise.

Retrograde.

The fate of persons, in the more concentrated forms of the continued fevers of the West-Indies, is generally visible where the disease has been left to its own course in the early part of the third day. I shall therefore now consider the case as it presents itself on the fourth,—such as it is stated to be in the description at *page* 54. The hopes of cure are then small; but the following are the means and management through which a cure is to be attempted. The patient, for instance, is to be immersed in a warm bath of rather high temperature—with the addition of a certain portion of *ammonia*, or *eau de Cologne*. After fifteen minutes of immersion under friction of the extremities and particularly of the abdomen, a vein is to be opened in the arm, and blood abstracted in quantity not exceeding ten or twelve ounces. When the arm is bound up, something cordial is to be given internally, viz. soda water, brisk bottled porter, or a glass of genuine champaigne wine if it can be procured. The limbs and abdomen are to be strongly rubbed while the body remains immersed in the bath: the heat of the bath ought to be at least 98, the effect augmented

CHAP. VII.

by as much of the stimulating ingredient as can be conveniently borne. Cordials—such as are most agreeable, are to be given at intervals: the vein is to be re-opened, the appearance of the blood, and the mode after which it flows from the vein carefully observed; for the changes, which occur in the appearances of the blood while it flows, are indications of change in the conditions of vitality, and such changes are considered as one of the safest guides for the direction of future proceedings. The benefits of purgatives are considerable in the condition under view; and the purging tincture of aloes and myrrh, with the addition of rectified oil of turpentine, has appeared to myself to be one of the best, particularly as following the exhibition of calomel. Camphorated mixture with zinc and alum; and, on other occasions, dilute solution of sugar of lead, viz. ten grains of sugar of lead, two drachms of chrystals of tartar dissolved in a quart of boiling water and given by wine glassfuls at a time every two hours or oftener, frequently restrains vomiting;—and, if it do not prevent, it at least retards the progress of disorganization. Soda water, brisk bottled porter, brandy and even spirits of wine, &c. have also been employed by myself for allaying vomiting, and they have been employed with benefit in some very untoward cases of disease.—The state of the malady now under view, which is what is termed yellow fever with black vomiting of different shades, is a forlorn one, generally indeed considered as a totally hopeless one. It would be arrogant pre-

sumption to say that it is remediable, at least to say that the effect of remedies can be calculated; but I have grounds to say that combinations and successions of the remedies now mentioned—stimulant or abstractive, with gestation in spring carriages in the open air, have sometimes forcibly maintained life for a given time, and even finally rescued the patient from the grave; but, in a case of such extremity, no discreet man will venture a prognostic.

The above is an outline of the mode of proceeding, recommended for the cure of the continued fevers of the sanguine constitution, as differing in degree, stage and condition. A short remark on the treatment of the more concentrated of the periodic will suffice. Of the curative means, abstraction of blood from a large orifice and in large quantity precedes every other—not only as preventative of dangers by its own power, but as preparative of the successful action of remedies which are held to be specific in the cure of the disease itself. The abstraction alluded to is to be made with all the known provisions that contribute to assure the efficiency of the act.—When signs of internal congestion, and of violently excited action have been removed by the effect of bleeding, the habit being thereby rendered susceptible throughout, an emetic follows next in order of time. Of emetics, the preference is due to the antimonial, where the subject has been suitably prepared for its operation; and, where the circumstances stated in the preceding pages of this work have been duly attended to in the administration, the

Periodic.

CHAP. VII.

effect is often decisive of good. After the operation of the emetic, it is advisable to give a purgative. Jalap with calomel is one of the most efficient: its effect is rendered more extensive, and its operation is rendered less unpleasant by the addition of James' powder, or a certain portion of acetated water of ammonia. A blister to the nape of the neck, extending to the interval between the shoulders, affords an additional security against recurrences of danger: it even removes some of those latent causes which cannot be ascertained, but which, in some way or other, now and then oppose the successful operation of bark in preventing the return of paroxysms.

When the intermittent has been brought to order and regularity, congestions removed and general susceptibility to ordinary impression restored by these and other suitable means of remedy, an ounce and a half, or two ounces of genuine bark, given in doses of two drachms at an interval of two hours between each dose, rarely fails to prevent the recurrence of the paroxysms,—and, with due attention to diet and regimen, it often cures the disease permanently. The virtues of the bark are improved, that is, the effect is more certain, the cure more perfect, if twenty or thirty grains of the muriate of ammonia be added to each alternate dose.—With suitable preparation of the subject, I consider bark as sovereign for the cure of fevers of the intermittent form. It conduces to safety in the remittent, but it does not arrest progress abruptly. The spi-

der's web is of more dependence than the bark, that is, it may be given in a greater latitude of condition and with more certainty of effect, not only as preventative of the return of the paroxysm, but as suppressive of its course at all its stages.

The following cases are selected from a great number now in my possession. They are selected with a view to give the reader some idea of what was actually done by different regimental surgeons.

CASE I.

April 28th, 1812.—Sergeant Halley, 25th regiment, aged 28, of a full habit, active and athletic, attacked at six in the evening with giddiness, violent pain of the head accompanied with delirium; the pulse 136,—full and strong; the skin dry; heat 102,—pungent; tongue slightly furred; pains in the back and limbs severe. Bled to the extent of 46 ounces; tepid bath; head shaved and blistered; purgative bolus. April 29th,—pulse 88,—expansile; heat 96,—equally diffused; gentle perspiration; tongue moist and clean. Calomel and James' powder: aq. ammon. acetat. April 30th,—Pulse 76; skin soft and cool:—recovered rapidly.

CASE II.

April 9th, 1812,—Wilkinson, 25th regiment, aged 30, of a spare habit, attacked about eleven o'clock in the forenoon, brought to the hospital in the evening, complaining extremely of pain of the head. The face was flushed, the heat great, the skin dry, the pulse 100,—full and hard; pains in the loins and limbs severe; tongue foul. Bled to near sixty ounces; the pulse sunk to sixty in a minute, or rather under sixty, becoming, at the same time, regular and free. The head-ache was entirely removed; the heat and fever completely extinguished—

CHAP. VII.

without fainting or disposition to faint. A purging bolus was given immediately—the operation of it accelerated by an injection. April 10th,—the skin cool and soft; the pulse 80,—full and expansive; the tongue clean; thirst inconsiderable. A blister was applied to the forehead and temples; aq. ammon. acetat. with calomel and James' powder in repeated doses. April 11th,—pulse natural:—no remains of disease. April 12th,—The mouth somewhat affected by mercury; no other complaint:—recovery rapid.

CASE III.

April 24th, 1812.—B——, an officer, attacked in the forenoon with the ordinary symptoms of fever; the head-ache violent—almost intolerable; the pulse strong and frequent. Bled to ten or twelve ounces,—not materially relieved. The symptoms very urgent in the evening; the vein again opened and between fifty and sixty ounces abstracted by a large orifice while he reclined on the couch. The blood was allowed to flow until the pain of the head was altogether removed; the pulse became open, free and expansile,—it still continued of febrile frequency. A purgative had been given soon after the commencement of the indisposition and before the second abstraction of blood; the aq. ammon. acetat. was now given at intervals. April 25th,—sleep and copious perspiration during the night. April 26th,—no fever:—recovery rapid.

CASE IV.

March 29th, 1812.—Blackburn, 25th regiment, aged 28, admitted into the hospital in the evening, complaining of the ordinary symptoms of fever which then prevailed in the garrison. A purging bolus was given immediately; and, sometime afterwards, calomel with James' powder and aq. ammon. acetat. at intervals. March 30th,—severe head-ache; severe pains every where, with a particular kind of catching in breathing; the pulse frequent and full; the tongue dry; the

heat high; the sensations extremely distressing. Bled to the extent of 36 ounces,—became faint under the operation: copious evacuations both by vomit and stool—the purgative not having operated till now. The pains of the head and other parts ceased, and catching in breathing disappeared; the pulse nearly natural. March 31st,—the pulse frequent and quick, but soft and free; the tongue foul,—a sense of fulness at stomach with impatience of pressure. Blister to the epigastrium; camphorated mixture with a small portion of zinc at intervals of four or five hours: calomel and James' powder continued. April 1st,—the mouth somewhat affected by mercury; the body open; the tongue still foul; the skin soft and open; the pulse regular,—quick,—soft. April 2nd,—the mouth affected; diaphoresis considerable. April 3rd,—considerable salivation:—recovered.

CASE V.

November 11th, 1813.—Watley, R. Artillery, of a robust form and full habit, attacked about three o'clock in the afternoon with giddiness, pain of the head, sickness and vomiting, and brought to the hospital before five. The pulse was hard and frequent; the skin hot, but moist. Bled to the extent of 20 ounces,—somewhat relieved,—not much: immersed in a warm bath, the vein re-opened, and two pounds and a half abstracted in addition, making in the whole near four pounds: cold water was affused upon the head and shoulders in quantity; the head-ache and uneasiness at stomach entirely removed. Calomel gr. x., and, at a short interval, a solution of Epsom salts; blister to the head. November 12th,—sweated freely in the night: bowels freely opened. November 13th,—no complaint. November 18th,—discharged.

CASE VI.

November 14th, 1813,—Brown, R. Artillery, aged 24, stout, plethoric, indisposed for some days, admitted to day complaining most severely of pain of the head, breast and stomach: the

CHAP. VII.

pulse hard and frequent; the skin hot and dry; thirst great; body costive; respiration hurried and difficult. Bled to the extent of five pounds. Ten grains of calomel, followed, at a short interval, by a solution of purging salts; blister to the breast. Fainting supervened after the subtraction of blood; the pains of the head and chest disappeared. November 15th,—pulse nearly natural,—perspiration during the night; tongue white, but moist;—not much sleep. Calomel with rhubarb; blister to the head. November 16th,—body open; no pains of any kind. November 18th,—discharged

CASE VII.

October 27th, 1813.—Gordon, R. Artillery, aged 27, attacked suddenly in the evening and brought to the hospital immediately, complaining of severe pain of the head—darting and almost unsupportable, accompanied with pain about the chest of a nature not easily understood. He soon became furiously delirious; the pulse strong,—hard and frequent; nausea with vomiting. Bled to the extent of five pounds; warm bath; calomel, followed by a solution of salts; blister to the head: relieved by the bleeding,—composed after the bathing. October 28th,—pulse calm; skin cool; bowels not opened: castor oil,—sleep,— skin moist. Evening,—several stools. October 29th,—feelings of weakness; nausea: no fever: calomel and rhubarb. October 30th,—better. November 3d,—discharged.

CASE VIII.

September 29th, 1814.—Nesbit, R. Artillery, attacked on the evening of the 28th with violent pain of the forehead and temples, shivering and other symptoms of fever, and brought to the hospital in the morning under very aggravated symptoms of disease. The pulse was full, strong, and frequent; the face flushed and swollen; the eyes red and painful. Bled to the extent of four pounds; tepid bath followed by cold affusion. The bleeding not having removed, or even mitigated the seve-

rity of the pain of the head, the temporal artery was opened, and two pounds and a half of arterial blood were thereby obtained;—instant relief was the consequence.—Blisters to the nape of the neck and to the head itself: a draught—tincture of opium and æther: calomel gr. v.; and, at a short interval, a solution of purging salts. Evening,—sickness and vomiting occasioned by the salts—body not open: castor oil—purging clyster. R. ceruss. acetat. gr. vi.; aq. ammon. acetat. oz. i.; mist. comphorat. oz. ii.:—half an ounce every hour. September 30th,—he threw up the castor oil—and vomited several times during the night: copious evacuations by stool: free from pain;—more or less of nausea. Castor oil repeated,—again rejected. R. Carbon. Ammon. gr. xii.; Magnes. alb. scr. i.; aq. puræ, oz. ii.; Succ. Lemon. oz. ½. October 1st,—several evacuations by stool,—passed a good night: twenty grains of powder of charcoal three times a day. October 2nd,—the powder of charcoal repeated—with infusion of bark. October 3d,—an emetic of emetic tartar and ipecacuanha. October 4th,—purging draught. October 5th,—discharged to duty in perfect health.

CASE IX.

May 5th 1815.—D——n, R. Artillery, attacked with fever of great apparent violence—head-ache, vertigo, &c. Bled to the extent of seven pounds: warm bath; purging mixture. May 6th,—no fever—no complaint. May 7th,—no return of fever—no complaint. May 8th,—well. May 12th—discharged.

B. SECTION II.

Cure of Fever in the Gangrenous Temperament.

I have stated, in some detail, the various means employed by myself for the cure of the fever of the West-Indies, as it appears in subjects of the san-

CHAP. VII.

guine constitution under the progressive form of action. I shall now, with as much precision and in as little compass as I can, consider the leading points of treatment in the gangrenous retrograde,—a form, which according to my own idea, may be regarded as the counterpart of the sanguine progressive. On this subject I encounter an host of prejudices; but as I have described, at *page* 72, the character of fever manifested on what I term the gangrenous temperament, I shall now notice the means which I employ with a view to its cure,—not urged to do this from the desire of promulgating a novelty, nor restrained from doing it through timidity of offending opinion. I state the fact according to my best apprehension:—truth is my object and my protection.

Steps in Cure at the early Stage.

The cause of fever, as applied to subjects of the gangrenous constitution, produces a disease of different degrees of force and intensity, but, as of one general character, open to be acted on by one general remedy. It is a fundamental rule in medical practice that the course of fever, whether the action be progressive or retrograde, be arrested by one train of remedial means, and that action analogous with that of health be solicited and moved by another. This is a position which no one will contest. The difference of opinion, if a difference exist, must be sought for in the selection and application of the means that are employed to effect the purpose. When I venture to place abstraction of blood at the head of the list of the remedies

employed for the cure of fever of the gangrenous character, I do not expect that the medical world will accede to the recommendation. I have however so employed it:—the effect has been fortunate; and, when I seek for the reasons of the effect, they appear to myself at least to stand on firm ground. But I shall detail the steps of the proceeding with circumstance, and leave the reader to form his own conclusions of the proceeding and its result. For example, if the patient be brought to the hospital soon after the commencement of the fever, whether the febrile action be of the higher or lower degree, he is placed in a warm bath of rather a high temperature, the body rubbed with soap and scrubbed with brushes, the head shaved—at least the forehead and temples, a vein opened in the arm while the body is in the bath, the blood allowed to flow, the changes, which take place in the mode of flowing and in the appearance which the mass assumes as it falls into the vessel, carefully observed. In this form of disease, the blood flows reluctantly for the most part, and in many cases, it only flows as urged by friction and the artificial heat of the bath. It is likewise for the most part dark coloured—and in point of heat of a low temperature. If the colour change from a darker to a brighter red, and the stream, from a reluctant to a brisk and rapid current with increase of heat, we have evidence of a change in the circumstances of the case, and grounds to anticipate a fortunate one on the issue of the disease. Abstraction of blood is

CHAP VII.

prescribed in the case stated, but the quantity is not defined by prescription;—it is from observation of effect under the act of flowing that we safely judge the measure. It is proper that the orifice made in the vein be free; but it is not proper that it be large, or that we endeavour to evacuate in the shortest possible time; on the contrary, it is advisable to compress the orifice at intervals, so as to interrupt the flowing of the stream—with a view to ascertain and estimate the effect of what has been done, or what is doing. Our course is a course of experiment. It is safe where conducted with circumspection; it may be dangerous where made at random, or without a view to contingencies in the act of progression. When the changes contemplated by abstraction of blood have been effected, the skin purified and animated by scrubbing and the heat of the bath, the patient is to be raised up, placed upon a stool, and submitted to affusion of cold water upon the head and shoulders—either from a bucket or by means of a sponge. He is then to be laid upon a couch in a warm apartment,—supplied with warm tea or other warm cordial liquor,—wiped dry with linen towels, afterwards rubbed long and strongly with flannels heated at the fire, finally with hot and stimulating oils, covered with his hospital dress, and removed to the ward allotted for him.

Prevention of Recurrence.

The original tendency of the disease is supposed to be checked, the course moved into another channel by the proceeding here described. The prevention of recurrence is generally assured by the influ-

ence of a warm and well ventilated apartment, by frequent ablution with cold water, frictions of the skin with hot and stimulating liniments, cordial and stimulating drinks and various medicines of the stimulating, antiseptic, tonic class, viz. snake root, camphire, ammonia, yeast, nitre, muriatic acid, acid fruits, peruvian bark, &c. gestation in the open air, and such other exercise as the strength of the patient can conveniently bear.

Advanced Progress.

If the disease hath been of some days standing, and particularly if, together with the general gangrenous diathesis, there exist accumulations or congestions of blood in the substance of the spongy organs—lungs, liver or spleen, though the application of remedy is still to be directed by one principle, the adjustment is difficult and the effect little certain. The abstraction of blood is of principal dependence; but, unless it be preceded by a suitable preparation of subject, it is not applied with effect, not even with safety. The preparation consists in the application of external heat to the surface by the warmth of the apartment, by the temperature of a bath raised to 96 or upwards—its stimulating power augmented by the addition of water of ammonia, *eau de Cologne,* or other material of that class. When the patient has been immersed in the bath for fifteen or twenty minutes, the body rubbed by the hand or scrubbed with brushes, &c. a vein is to be opened in the arm, the blood allowed to flow, and the changes which it assumes in the act of flowing carefully observed—with a view to

CHAP. VII.

obtain information for the further prosecution of the object. If the patient become faint before there be evidence that the end in view is attained, the orifice is to be closed, a draught of something cordial administered, the face and breast sprinkled with cold water, with vinegar and water, or aromatic spirits. After some minutes of repose, and after the signs of recovery are sufficiently manifest, the vein is to be re-opened and the blood allowed to flow, even urged to flow by external frictions and internal cordials until internal congestions be removed, general susceptibility restored, and circulation equally balanced throughout the system. As soon as this is effected, the patient is to be raised from the recumbent posture, placed upon a stool within the bath and submitted to the affusion of cold water—sea water, or water impregnated with salt. Removed from the bathing tub, the body is to be laid upon a couch, wiped dry and afterwards rubbed with flannels heated at the fire to as great extent as can be endured without pain, a warm and grateful internal cordial being given at the same time with a view to augment effect. When the dry rubbing is finished, the whole body is to be rubbed with camphorated liniment rendered pungent by oil of turpentine or ammonia; or it is to be washed preferably with *eau de Cologne*.—What has been stated constitutes the sum of treatment recommended in the later stages of fevers of the gangrenous temperament. If applied under a right conception of the principle, and executed in all its steps with

minute attention to circumstances under the immediate eye of the physician himself, the result may be presumed with confidence to be favourable; at least a course will be opened through which a favourable result may be attained; and, when attained, attention to circumstances will for the most part assure its course against contingencies. When the patient is disposed in bed, in a warm but well ventilated apartment, it is advisable that the bowels be excited to effective action by a warm and stimulating purgative. No one of the purgative class has appeared to myself to be so well adapted to the purpose, in the case in view, as purging tincture of aloes and myrrh quickened in its action by the addition of an ounce or more of the rectified oil of turpentine.—The drinks, or dilution given as auxiliary at this time, are to be warm—stimulating rather than insipid; the internal remedies, such as are calculated to maintain activity of circulation in the extreme vessels of the system, without exciting high or inordinate action in any part of it. Of these, a bolus, composed of camphire ten grains, snake root fifteen, nitre fifteen, James' powder four and carbonate of ammonia five,—more or less according to circumstances and given every fourth or fifth hour, comes nearer to the purpose than any other with which I have made experiment. It is to be borne in mind that the main object of cure consists, at this stage of the business, in supporting the impression which maintains the forward course, but which does not incur the risk, by quantity or

CHAP. VII.

quality of stimulation, of exciting action to excess, —an occurrence followed by exhaustion, in the present state of things, almost irremediable. Besides the support, which the forward course obtains from what may be strictly termed medicinal aid, diet, regimen and external applications have an important share in maintaining the salutary tendency now excited:—they are, in fact, the means through which alone we can expect to give it permanence. Wine, cyder, bottled porter, profusion of fresh fruit, frequent ablution of the skin and change of linen, gestation in the open air in a suitable carriage, frictions of the skin with stimulating oils,—with lime juice and salt, or vinegar and salt, even with brine of beef or herrings;—and, for the more refined, sprinkling or washing the body with *eau de Cologne*, are among the number of the means to be employed for the purpose stated—singly and in combination, or alternated with each other according to the varying circumstances of the case.

I have stated, at some length, the manner of proceeding which I myself adopted, in so far as I could obtain means, for the cure of fever of the gangrenous constitution in the latter stages of its course. I have evidence of the benefits of the practice from experience; but, as the practice is unusual, it may be necessary that I state the causes on which I suppose its good effects to depend. It does not belong to this place to enter into discussion on the nature of the powers which influence modes of action in the animal system, and thereby constitute

different forms of temperament. It is sufficient to observe that such differences exist, and that they depend upon causes, now more general, now more local. The constitution of habit, which I term gangrenous, is sometimes general and in a manner epidemic, arising from influences which we do not pretend to estimate; sometimes it is local, more visibly connected with local causes; and sometimes it is artificial, the direct product of causes generated by our own faulty arrangements. But, however produced, we perceive under its existence a change in the crasis of the blood,—an apparent diminution of energy or vitality indicated by slow movement or disposition to stagnation in the veins, particularly in the veins of organs of spongy structure. This disposition constitutes disease: it is the first step, and it is the object of the medical act to remove it in its beginning. We are ignorant of the nature of the matter of life; but we are capable of observing the existence and operation of causes which raise or which depress the expressions of it. If expression be weak, it is to be stimulated to greater exertion; if strong, to be lowered to a just level. The difficulty lies in the execution, viz. in obtaining correct knowledge of the power of means, and in adjusting with precision the mode of applying them. Addition is generally supposed to be stimulant; abstraction is supposed to be depressive:—the supposition is true only relatively. Experience furnishes numerous proofs that no power of stimulation which can be applied to an animal body uniformly

CHAP. VII.

succeeds in moving a safe and vigorous action under the stagnations which occur in certain forms of gangrenous fever; and further, the records of practice shew no less clearly that instances are numerous, where safe and vigorous action has, under the same circumstances of disease, followed copious depletion which is usually deemed depressive. If we consider the animal body, in so far as respects the circulation of the blood and humours as a hydraulic machine, the movement, in the canals of which, is impeded by various causes of obstruction, we are forced to admit that the impulse of *vis a tergo* will either clear away the obstruction and thus open the passage, or, if the resistance be unsurmountable, doing violence to the sides of the canal, it will necessarily produce extravasation and its consequences. The one or other of these must be the result of simple stimulation from causes which urge the course by force. On the other hand, if the canals be obstructed by undue local accumulations, and if, by an opening made in a vein, the whole of the circulating mass move towards the opening, accumulation is withdrawn from the part, circulation is equalized throughout, and, if no violence has been done to the sides of the canal by the excess of previous obstruction, the first step of the curative process is made on sure ground:—the disease is in fact cured, or its condition is so changed that it may be easily cured. The effect stated is the direct consequence of abstraction of blood from the veins; and the reader may perhaps comprehend, from this view of it, in

what manner the dangers of the gangrenous form of fever are obviated by means of bleeding; as he may form an opinion in the other, in what manner the same dangers may be overcome by stimulation through addition of quantity forcing a barrier. But while the form of disease, now under consideration, is sometimes removed by stimulations through addition, sometimes by depletion through abstraction simply and unassisted; yet, simply and unassisted, the one or the other often fails—combined and employed in succession they almost always succeed; unless where the structure of important organs has suffered actual violence from distention, or where the principle of life has been exhausted by a sudden, and as it were an electric explosion,—an occurrence not uncommon during the reign of malignant epidemics, or in cases of relapse in unwholesome hospitals. It is here stated that stimulation and abstraction fail singly, that they succeed as combined and judiciously alternated; and I may add, in illustration of the fact, that external local gangrene often remains insensible to the action of the most powerful stimulants, or to depletion of blood by scarification as singly and simply employed; that depletion, by scarification or otherwise, followed by powerful means of stimulation rarely fails to produce effect—often a beneficial and decisive one. The fact is plain,—submitted in many instances to what we may term ocular inspection. If the fact be clear in the case stated, the inference may be with safety applied to disease of the general system; at

CHAP. VII.

least, acting on this principle, I have myself employed depletion and stimulation in succession or in combination, alternating them variously in the course of the proceeding according to change in circumstances; and I have done so with the conviction of such benefit to the subjects of the experiment, as forces me to recommend the practice to the consideration of others.

The salutary effects from the method now recommended, viz. depletion and stimulation—alternate or combined, may be attained, and the reason of the thing may be comprehended though we regard the blood as a mere inanimated mass. It rests on removing resistance, and, when resistance is removed, in stimulating the acting parts into action. But, if we consider the blood as an animated fluid in a primary stage of organization, the sphere of bleeding is extended and rendered of infinitely more powerful effect as a remedy; it becomes in fact the remedial key, if one may use the expression, of the whole organic actions in the system. —It does not belong to this place to move a question respecting the vital condition of the blood. It is evident to every one's observation, who takes the trouble to observe, that the mass of blood is a mixed body possessing a peculiar constitution; and it is also evident that changes, produced in its quantity by abstraction, produce changes in its actual condition. These are often sudden and visible to the eye while the blood flows from the vein; and it is further observed that action generally takes its characte-

ristic feature from the changes which are produced upon the blood by diminution of its quantity, viz. brisk or languid as the blood assumes or loses its activity of cohesion. It was the observation of these and similar facts which induced me to employ bleeding simply, or combined and alternated with stimulation, in forms of fever to which it has been rarely, if ever, applied.—The diminution of quantity produced a change on the crasis or constitution of the mass, and the character of the organic action followed the character of the change which was thus induced upon its constitution. If this be so, bleeding becomes a remedy in fever, not only in so far as it diminishes quantity and equalizes circulation, but as it changes conditions, whereby it contingently rectifies quality, and produces correspondent healthy action throughout the whole organic series of the system.

Intermittent.

The intermittent form of fever occurs frequently under the existence of the gangrenous constitution; or the force of the febrile cause is so concentrated and so modified, in certain places and in certain seasons of the year, as to produce that species of stagnation in the venous system which is here termed gangrenous. The method of cure rests on the common basis of the method that is recommended for the cure of continued fevers of the gangrenous temperament, only it is to be borne in mind that, as the action of the cause recurs at particular times, and as the first act of the recurrence is often dangerous, the dangers are to be obviated by anticipation.

CHAP. VII.

With this view it is recommended—where intermittents of the gangrenous or malignant character prevail, that, together with all the means usually employed for prevention, the circumstances of the patient be narrowly watched for some hours previous to the expected return of the paroxysm, that warm baths be in readiness—with a medical officer in attendance, that the patient be immersed in the bath on the first feelings of indisposition, and that, in about ten or fifteen minutes afterwards, a vein be opened in the arm, the blood allowed to flow until the signs of internal congestions of all kinds be evidently removed,—a condition cognizable by accession of ease and freedom in organic movement, and comparatively pleasurable sensation throughout the whole system. It is not possible to say *a priori* what quantity of blood will be sufficient to produce the effect. In general it will be large, and, as a large quantity may be abstracted with safety while the body is immersed in the bath, it would be improper to desist before there be evidence that the object is attained. When a change in the appearance of the blood as it flows from the vein, and a change in the general feeling and sensation of the patient as immersed in the bath indicate a decided change in the condition of the disease, the patient is to be carefully removed from the bathing tub, wiped dry, rubbed with hot flannels, and afterwards with hot and stimulating oils, a blister applied to the nape of the neck, extending to the interval between the shoulders, and every other

precaution taken, through regimen and medicine, to prevent recurrence to the original gangrenous form of action. Such is the outline:—it is unnecessary to go into farther detail.

CASE I.

August 6th, 1813.—J——n, an officer of regular habits, became heavy, languid, and anxious, complaining of slight headache,—the pulse slower and less energetic than natural. Between thirty and forty ounces of blood were abstracted from a vein in the arm: he became somewhat faint and the arm was bound up. The pulse was now free, open and more frequent than natural, the sensations light and comparatively pleasant. A sense of fainting, somewhat spasmodic, recurred three or four different times in the course of the first two hours after the abstraction of blood; but, after every recurrence, the sensations of health and comfort rose to a higher pitch as if something noxious had exploded in the act of fainting, until it was expended and the natural condition of things fully restored. A blister was applied to the nape of the neck; a purgative of brisk operation was given internally:—health was speedily and fully restored.

CASE II.

March 10th, 1814.—C——l, an officer, a young man of regular habits, felt unwell, but could not explain his feelings. He had no appetite, and he rejected the most of what he eat or drank: the countenance was rather dark; the eye clear: he had sensations of uneasiness, anxiousness, and weight in the hypogastric region; the pulse slower than natural; sleep disturbed or wanting. He was supposed to be threatened with a fever of the character that tends directly to venous stagnation; and, it was accordingly thought proper to anticipate the occurrence of it by abstracting a large quantity of blood from the veins.

CHAP. VII.

About two pounds and a half were drawn off by a large orifice while he lay in a recumbent posture. He was instantly relieved, slept sound, rejected no more of his food or drink; and, after the operation of a brisk purgative, found himself light and cheerful and in perfect health.

CASE III.

August 2nd, 1812.—Schoenmaker, R. Artillery, aged 33, admitted into hospital on this day, complaining of pain of the head and limbs, chilliness succeeded by heat, frequency of pulse and great thirst. Calomel gr. iv., P. antimony gr. ii. August 3d,—no proper evacuation from the bowels; heat of the skin diminished; calomel gr. iv., rhubarb gr. xii. August 4th,—seems easier, but complains of pain in the region of the stomach. Infusion of senna oz. ii., kali gr. vi.—to be given immediately and repeated every second hour; blister to the epigastrium. August 5th,—several evacuations by stool during the night; skin yellow. Saline mixture with antimony and camphire every fourth hour. August 6th,—Decoction of bark—two ounces with ten grains of snake root and four grains of kali three times a day. August 7th,—medicines continued. August 8th,—Decoction of bark continued with the addition of infusion of senna, rhubarb and kali. August 9th,—difficulty in making water: camphorated mixture with ætherial spirit of nitre. Effervescing mixture every fourth hour: common clyster. August 10th,—voided some urine, but not freely. August 11th,—restless in the night,—an involuntary stool in bed; now quiet, as if sleeping or dozing; yellowness rather increases; pulse intermits; swallows wine with more or less of arrow root,—refuses medicine. August 12th,—a discharge of blood from the mouth and by the anus in the course of the night: extremities cold and clammy: pulse scarcely perceptible:—comatose.—Died at 10 in the morning. *Opened.*—Liver preternaturally large, distended with thin dark blood which ran out in great quantity when the knife penetrated its substance: the gall bladder contained bile, but in no great quantity: the inter-

tines were deeply coloured with bile,---the veins of the intestines and of the mesentery unusually distended with black blood.

CASE IV.

March 25th, 1814.—Alexander Calder, R. Artillery, recently arrived from Europe, under thirty years of age, a strong and fine looking man of a full habit, had been drinking perhaps to excess in the evening, and was brought to the hospital about midnight in a state of stupor and insensibility---the face flushed, &c. Bled immediately to the extent of three pounds: he recovered his sense and recollection, but not perfectly: immersed in a warm bath; skin rubbed with soap and scrubbed with brushes: calomel gr. v.: a draught of tincture of opium and æther: head shaved and blistered. March 26th,—great irritability at stomach; little or no sleep; head relieved; pulse full, —not accelerated beyond natural; bowels not moved. Solution of salts,—instantly rejected. Bled to the extent of two pounds: warm bath: draught with tincture of opium and æther; castor oil at the interval of half an hour. Noon,—the castor oil retained,—no evacuation by stool: solution of salts. Evening,—head-ache considerable; pulse full and frequent; bowels obstinate. Bled to the extent of two pounds: cathartic extract in pills,—stimulating clyster. March 27th,—stomach retentive; four stools in the night; skin preternaturally dry. Solution of salts with aqua ammoniæ acetata. Evening,—nausea,—no actual vomiting. Effervescing draught with some drops of tincture of opium at bed-time. March 28th,—slept comfortably,—much refreshed,—perspiration in the night copious; no head-ache; nausea entirely removed; three evacuations by stool in the course of the night: diaphoretic mixture. March 29th,—restless in the night from irritation of blisters,—no sleep; skin hot and dry; circulation free and vigorous. Evening,—no desire to sleep: anodyne draught. March 30th, —much relieved by sound and refreshing sleep; perspiration free: diaphoretic mixture continued. March 31st,—seized suddenly in the night with a violent and acute pain in the right

CHAP. VII.

side, a short dry cough, impeded respiration. Three pounds of blood were abstracted from the arm,—the blood covered with a dense and tough crust: warm bath; large blister to the side; relief from the bleeding instantaneous: purging mixture in repeated small doses. April 1st,—cough unabated,—the expectoration---mucus with mixture of blood; respiration impeded, —pain considerable in attempting a full inspiration; the pulse full and frequent. Bleeding repeated to the same extent as yesterday; relief under the flowing of the blood: purging salts: blister to the breast: small doses of ipecacuanha every fourth hour. April 2nd,—easier than yesterday; no expectoration; bowels open; pulse frequent: mucilaginous mixture: tincture of digitalis. April 3d,—slept in the night,—seems better: pectoral medicines continued. Evening,—return of pain in the breast---particularly on deep inspiration: bled to the extent of one pound: anodyne draught at bed-time. April 4th,—bowels locked: cathartic repeated. Evening,—no effect from the purgative: castor oil, and, at a short interval, a clyster. April 5th,—evacuations by stool during the night. Ipecacuanha with tincture of digitalis in small doses. Evening,---return of pain in the chest;—pain sharp; cough distressing: bled to the extent of two pounds;—temporary relief: blister to the side: —the event very doubtful. April 6th,---restless and distressed; pulse small and feeble: anodyne at bed-time: wine, &c. April 7th,—sinks:—the circulation impeded; the pulse scarcely perceptible at the wrist. Died at about half past eight in the evening. *Opened.*---The marks of the disease which proved fatal were chiefly conspicuous within the cavity of the thorax. The right lobe of the lungs red, or livid exteriorly,---blood extravasated in its cellular texture as if from the rupture of a vessel; interspersions of purulent matter; tubercles and vomicæ in other parts; adhesions with the pleura very intimate; a large abscess in the most inflamed part—the quantity of pure matter at least one ounce and a half. The lungs adhered likewise on the left side; but the adhesion did not seem to be recently formed. The pericardium was distended with fluid in unusual quantity: the substance of one side of the heart was

unusually tense; and, in cutting into it, a quantity of bloody serum flowed out: the other side was extremely flaccid as if deprived of the common density of texture by the action of some morbid cause. The liver was large in size,---distended, but without apparent change of structure: the gall bladder was full of bile.

☞ The above case was interesting in its course, both on account of its medical importance, and on account of the character of the subject---one of the finest men in the corps and one of the best conducted in his ordinary life. He had drank too much previous to the attack; but he was not a drunkard. I left him on the 30th of May, as I thought likely to recover, though not beyond chances of danger. When I returned on the 9th of April, I found his death recorded in the case-book with the dissection as here transcribed. The first character of the disease seemed to be such as I include under the head gangrenous from excess. There were marks of stagnation at the commencement; obstinate torpor in the course; the termination or cause of death seemed to be a local explosion of a gangrenous tendency on a vital organ,---an occurrence not uncommon in relapse: it was here an accident not within calculation according to the rules of common prognostic.

CASE V.

March 26th, 1814.---W. Gardiner, R. Artillery, under thirty years of age, recently arrived from Europe, brought to the hospital in a state of stupor, the pupils dilated, the countenance deep crimson. The temporal artery was opened immediately and three pounds and a half of blood were abstracted: recollection returned: warm bath: frictions with soap and brushes while in the bath; head shaved and blistered; calomel; solution of salts. Evening,—free from pain. March 27th,—restless night; evacuations by stool—copious; thirst great; tongue white;—otherwise better: purging mixture with diaphoretic draught. March 28th,—head-ache in the night;—no sleep; pain in the abdomen; pulse frequent and hard; thirst great. Bled to the extent of two pounds: warm bath: solution of salts. March 29th,—better; slept a good deal; bowels opened: diaphoretic mixture. March 30th,—free from fever: infusion of bark. March 31st,—medicines continued. April 1st,—medicines continued. April 2nd,—discharged.

CHAP. VII.

CASE VI.

August 5th, 1813.—B——, R. York Rangers, had been indisposed for some days and was admitted into the hospital on this day, but was not able to give a very distinct account of himself. He appeared to be torpid both in mind and body; the countenance was heavy and bloated; the breathing heavy and oppressed---with more or less of cough; a dull oppressive pain of the head; the pulse frequent, small and weak; the skin dry. Purging mixture: blister applied to the chest:—very uneasy and uncomfortable. Bled (the quantity not stated)---the blood black; it flowed with reluctance,—the relief not remarkable; the pulse frequent,—without elasticity; the head heavy; the faculties dull; breathing still oppressed: head shaved and blistered: the physic has not yet operated. August 6th,—very uneasy in the first part of the night---anxiety and oppression extreme: an injection was given; the physic operated, and, after some evacuations, a draught was given of æther, ammonia, and Hoffman's anodyne liquor. Much better at 6 in the morning,—the head clear; the countenance animated; the breathing easy; the tongue clean; perspiration free and fluid; skin cool; pulse slow,—not weak; no appetite. August 12th,—recovered and discharged.

CASE VII.

August 11th, 1813.—A——, R. Y. Rangers, was attacked with symptoms of fever and brought to the hospital insensible and motionless. A vein was immediately opened in the arm and four pounds of blood were abstracted before he recovered sense and motion,—an emetic was given, as soon as he could swallow, which, operating effectively upwards and downwards, brought perfect relief: the head shaved and blistered: a blister also applied to the nape of the neck as preventative of recurrence. August 20th,—discharged in health.

CASE VIII.

May 24th, 1814.—A——n, R. Artillery, admitted in the morning, complaining of severe pain of the head, considerable fever and also purging. Bled to the extent of four pounds:—fainted and continued long faint; the head relieved; the tongue and lips dry; the pulse regular,—not frequent,—without energy; the skin dry and flaccid: calomel followed by solution of salts. Evening,—pain still felt at the forehead, but less severe; pulse regular, but weak; skin not animated; evacuations by stool frequent,—not effective. Warm bath: friction of the body with lime juice and salt: æther and laudanum internally. May 25th,—slept, and, according to his own report, sweated copiously in the night; three stools; some pain in the bowels; no pain of the head; considerable thirst; lips dry; skin flaccid,—not animated; pulse more frequent than natural,—weak and compressible---without energy; countenance of a hectic flush; respiration calm: no nausea. Evening,—rather better; tongue red and clean; skin flaccid; pulse without energy; heat rather below natural; feelings more comfortable; less purging. May 26th,---three or four evacuations by stool during the night; pulse somewhat more vigorous, but still under the natural energy; the tongue red; the eye clear. Draught—charcoal, ammonia, and lime juice at intervals of three hours. Evening,—skin and countenance more animated—warmer; perspiration; no pain of the head or bowels. May 27th,—better,—animated; no ostensible fever; bowels regular. May 30th—recovered—discharged.

CASE IX.

August 16th, 1814.—K——n, R. Y. Rangers, seized suddenly with oppressive heaviness, inability and feelings not easily defined, the pulse sluggish and obscure, or impeded. Bled to the extent of three pounds; the pulse became frequent, open and energetic; the sensations light and easy. August 17th,—no ostensible fever; weakness without pain; no evacuation

CHAP. VII.

from the bowels from a strong dose of jalap and calomel; no nausea; little thirst; pulse regular; sweated in the night—profusely according to his own account. Evening,—evacuations by stool. August 18th,—seized last night with severe head-ache; skin now dry; the pulse of febrile frequency. Bled to the extent of three pounds; bathed; blistered. August 19th,—return of fever during the night; now better. August 20th,—better; no vomiting; pulse nearly natural; tongue clean. August 21st,—better: 25th,—recovered: 28th,—discharged.

CASE X.

November 3d, 1814.—A Sergeant (a European) of the 8th West-India regiment, was attacked in the afternoon with chilliness, head-ache, sharp cutting pains about the stomach, tremors, agitation and great distress,—brought to the hospital in the night and bled to the extent of three pounds: the violence of the pain of the head diminished, the pain not removed; tremors and agitation considerable; tongue dry; thirst great. Six in the Morning,—bled to two pounds; faint and languid; head-ache removed; some sensation of heaviness remains; tremors and agitation ceased; head shaved—washed with vinegar, salt and rum, and covered with a strong blister; purging bolus. Noon,—head quite relieved; pulse nearly natural; thirst continues; heat natural; no tremor or agitation; body not yet opened. November 5th,—slept soundly; perspired freely; bowels open; no pain or uneasiness. November 6th,—slept and perspired; slight febrile commotion. November 7th,—better: 8th,—improves: 12th,—discharged.

C. SECTION III.

Cure of Fever in Forms of the Phlegmatic.

The fevers which occur under the phlegmatic form of temperament are numerous—whether pro-

gressive or retrograde. The cure implies considerable combination of means, and, in many cases, from obscurity of indication, a very considerable difficulty of execution. The direct cause of the phlegmatic temperament refers to disproportion in quantity, or derangement in the less appreciable quality of the coagulable lymph or gluten of the blood: the subject of the action is the cellular membrane; the effect, congestion and diseased accretion in part or in the whole of that expansion. The cure rests upon the same general basis as the cure of other forms of fever, viz. arrest of the existing diseased action, and excitement of that which is analogous to the action of health. The principle is clear, but the execution is often complicated; and I am not confident that I shall be able so to explain and illustrate it that the reader will easily comprehend it. I shall state the proceeding as concisely as I can, and afterwards give the reasons which induced me to try it, and now to reccommend it.

Mild Form.

1. If a person be submitted to medical care at an early stage of continued fever as it acts on the phlegmatic temperament, and as it acts only with a minor degree of force, it is recommended that he be placed as soon as possible in a warm bath, impregnated with kali or pot-ash and of rather a high temperature; that the body be rubbed with soap and scrubbed with brushes; and that, after the skin has been animated and purified by the warmth and scrubbing, a vein be opened in the arm, the blood allowed to flow until there be evidence of change in

CHAP. VII.

the existing condition of things,—a change expressed by changes which occur in the action of the heart and arteries, and in the aspect of the eye and countenance, viz. a change in the pulses, from drawling and inelastic to quick and energetic; in the eye and countenance, from dulness and statue-like immobility to animation and expression. When the changes expected from bathing and bleeding have been attained in the requisite degree, the arm is to be bound up, the patient removed from the bathing tub and laid upon a couch in a warm apartment, rubbed dry with linen towels, subsequently with flannels heated at the fire, and finally with a liniment of olive oil and water of ammonia—the ammonia in a high proportion. He is then to be conveyed to the ward allotted for him, disposed in bed and carefully covered with bed clothes. The effect of an emetic is often beneficial in this form of disease as exhibited in the common manner, it is more certainly so if a pint or more of tea, rice water, or other beverage, in which forty or fifty grains of kali have been dissolved, be premised to the exhibition of it,—even if more or less of kali be added to the water that is given to assist in forwarding its operation. Of purgatives, the infusion of senna—with a large proportion of kali, and moreover with some addition of acetated water of ammonia, has appeared to myself to be the best on this occasion.—The other internal remedies are not numerous:—the muriate of ammonia in large doses, viz. a drachm every three or four hours,—twenty grains of powder

of snake root and ten of camphire made into bolus is a suitable and efficacious form; and, with occasional friction with liniment of olive oil and water of ammonia, it is ordinarily sufficient to maintain the ground gained by the first proceeding:—the re-establishment of health in such case is speedily effected.

Advanced Stage.

But if a person, suffering from fever of a similar character and of a similar degree of force, be not submitted to medical care until a late stage, viz. the fourth or fifth day from the attack, though the principle which directs the method of cure continue the same, and the means employed be also the same as in the preceding, more caution is required in the application of them—and there is less certainty in the effect. The same mode of proceeding is to be pursued in the management of the bath here as in the early stage; but blood is to be abstracted at intervals rather than at once, though not at longer intervals than such as assure from the dangers arising from sudden and large evacuation in a state of feebleness or torpor. The arterial action is not high at any time: it ordinarily becomes higher under bleeding, and bleeding in this case rarely occasions sickness and fainting. But, as it is unpardonable to expose the life of a patient to chances of danger that may be avoided; and, as it is possible that dangers may arise from profuse bleeding at a late period of fever, it is recommended that blood be then abstracted with a secondary rather than a primary object in view, viz. with a view to change conditions gradually rather than to arrest actions precipitately.

CHAP. VII.

When this has been done to a certain extent, the completion of the cure may be committed to emetics and purgatives administered in the manner before directed, aided by frictions with liniments of oil and ammonia, by muriate of ammonia, snake root and camphire given internally, with plentiful dilution of alkalized drinks, warm and dry air, &c.

Aggravated Form.

2. When the disease in question is of the major degree of violence and presented to the physician at an early period, viz. within twelve or fourteen hours after the attack, the principle which directs the cure and the means which effect it are still the same; but the quantity of means required is greater, at the same time that the application of them is to be made under a still bolder exercise of the principle. There is nothing to be added on the subject of bathing to what has been already said; but bleeding, though the symptoms indicate no increase of arterial excitement, may and must in fact be carried to an extraordinary length, particularly where the brain or lungs sustain more than an equal degree of the febrile action. The patient in this case, that is, where the countenance is heavy and inanimate, the eye white and torpid, is to be bled while the body is immersed in the bath—the orifice large,—the jugular vein, where it can be conveniently done, opened in preference to a vein in the arm. Fainting rarely occurs from loss of blood in this form of disease: four pounds have been abstracted in many; five, and even six in some without producing the least disposition towards it. When a change has been indu-

ced by bleeding, or when bleeding has been carried as far as it can be carried at one time without compromising the safety of the patient's life, the body is to be removed from the bath and treated in the manner that has been already described; only, as the case is stronger, all the means are to be carried farther and applied with persevering assiduity for a length of time. If there be no decided change, or evident tendency to favourable change after an interval of twenty hours from the commencement of the discipline here enjoined, it is necessary that the patient be re-conducted to the bath, that the process of bathing be repeated in all its parts, that a vein be opened and blood abstracted to the extent of three or four pounds, in short to such extent as may produce a change in the circumstances of the case, the physician observing with a careful eye the appearances which arise under the flowing of the blood, and permitting himself to be guided in his course by the indications which these appearances suggest. After the arm is bound up, and the patient has been suffered to repose for some time immersed in the bath, he is to be raised up, placed upon a stool, and submitted to the affusion of cold salt water upon the head and shoulders. He is then to be treated with dry frictions and with friction with liniments as on the former occasion, and carried back to his bed with all necessary care and precaution. If there be signs of congestion in one part more than another, it will be proper to apply a blister as near as possible to the seat of affection;

CHAP. VII.

and, on this ground it is advisable, as precautionary, that the head be shaved and covered with a blister —continued on the neck to the interval between the shoulders. Ammonia, camphire, and nitre are to be given internally in large doses; every drink and nourishment is to be alkalized; and wine or other cordial may be necessary on some occasions.—The above measures, harsh and empirical as they may appear to be, imply no danger to the life of the patient if they be conducted with the requisite precaution under the eye of a discerning physician; and, while safe, I am warranted to say from experience that there will occur few cases of recent fever capable of resisting their power, if times and circumstances for their application be proper and if none of the requisite accompaniments be neglected.

Advanced Period.

But if the disease hath attained a late stage, that is, the fourth or fifth day before it has been submitted to the care of the physician, the strong practice recommended above, though sovereign at the early period, has now no place. Congestions are, for the most part, already formed in the more important organs, and the removal of them, if they can in fact be removed, can only be attained through a slow process, and even then imperfectly. The bathing, as before described, still maintains its place: the abstraction of blood cannot be carried to great extent at one time,—not perhaps to exceed twenty ounces; but it may and it must be repeated frequently. Bathing, bleeding, and frictions, combined and alternated in such manner as to agitate

and change by impulse the condition of the whole circulating mass, constitute the cardinal means of cure. The internal use and the external application of the whole alkalescent tribe of remedies aid the general purpose; and mercury, given internally and applied externally and so directed as to excite salivation, presents itself on this occasion as a remedy of some importance. The case is difficult; but something may be done by perseverance and well timed application of suitable means:—the physician who studies principle knows how to act.

Periodic.

3. Fever of the periodic form appears frequently under prevalence of the phlegmatic constitution, more frequently perhaps than under any of the others. If submitted to medical cure at an early stage, and treated with decision upon a sound principle, it is safely and speedily cured; if allowed to pursue its own course without interruption, or if feebly opposed, it extends to a great length of duration, and, when finally said to terminate, it ordinarily leaves the subject in an impaired and valetudinary state of health. When the subject of periodic fever is presented to the physician, and when the character of the temperament under which the disease acts is ascertained to be phlegmatic, the body is to be immersed in a warm bath of rather high temperature at the commencement of the paroxysm, and, as soon as the sensations of cold are removed and the surface somewhat animated by heat, a vein is to be opened in the arm, the blood allowed to flow, the changes which occur in the appearance as it actually

CHAP. VII.

flows, and the changes, which take place in the pulses of the heart and arteries and other functions of the system during the abstraction, to be minutely observed, so that the information of condition thence obtained may be available in directing the proceeding, and in regulating the quantity of blood which is to be drawn off at one time. The quantity will necessarily vary according to circumstances, viz. condition of subject and condition of disease, from two to four pounds; but when it has been carried to the just point, and when susceptibility to ordinary impression is restored, the patient is to be removed to a couch in a warm apartment, the body wiped dry with linen towels, afterwards rubbed dry and rubbed for some length of time with flannel cloths heated at the fire, and finally with a liniment of olive oil and ammonia,—the ammonia in high proportion. This process being finished, the patient is to be conveyed to bed in his proper ward, a pint of warm tea, or rice water given immediately —with the addition of forty grains of salt of wormwood, and, in half an hour, an emetic—tartarized antimony in preference—administered with all the precautions that are necessary to be observed in giving emetics. . When the operation of the emetic is finished; a purgative is to be prescribed: jalap and calomel, with twenty grains of salt of wormwood, is the most convenient and the most efficient. All the drinks are to be alkalized, and acetated water of ammonia given at intervals under the operation of the purgative. By these means, the subject may

be considered as prepared for the exhibition of Peruvian bark; and, if the type be single tertian, there will be time to give bark in quantity sufficient to prevent a return of the paroxysm, at least to act so as to diminish its force when it does return. Two drachms of bark, fifteen grains of snake root, and thirty of muriate of ammonia, given every two hours will rarely fail of this effect. Cobweb, to the amount of ten or twelve grains, given at an interval of two hours before the expected return of the paroxysm, and repeated a short time preceding the actual hour of invasion, is still more effectual.

Organic Congestion.

If the disease has been of long standing, the mode of preparation for the exhibition of bark is not so simple, nor the effect so certain, even when the preparation is supposed to be made, as it is in the former case. Congestions have now usually been formed to greater or lesser extent in the interior of one or other of the internal organs, most commonly in the organs contained in the abdominal cavity:—these must be resolved to a certain extent before bark can be given with a confident expectation of benefit. Bleeding, repeated at intervals, but not to great extent at one time, frictions of the body with liniments, friction with mercurial ointment with a view to excite salivation, alkalized drinks, the juice of alkalescent and deobstruent herbs, viz. wormwood, dandelion, scurvy grass, &c.; diet of a low scale, and exercise in the open air on horseback or in a carriage—combined, alternated and applied to circumstances, constitute the

CHAP. VII.

chief means of preparation. If the basis of the congestion be moved by a judicious application of the means stated, the habit, thereby rendered susceptible of general impression, is brought under the controul of a general remedy. Peruvian bark then resumes its place. It notwithstanding sometimes fails as given singly and in the common manner, particularly in fevers of quartan form; it has not failed in any case that has fallen under my notice, not even in the quartans of Walcheren origin, as given in the following manner, viz. two ounces of bark, half an ounce of snake root, half an ounce of flowers of sulphur and two drachms of salt of wormwood made into an electuary with aromatic syrup. The size of a large nutmeg of the electuary is to be given every two hours so that the whole may be taken in the existing intermission; a blister is also to be applied to each wrist about six hours before the paroxysm is expected to return. From the joint operation of these means, I have not as yet been disappointed in my expectations.—It is to this form of disease that arsenic has appeared, to myself at least, to be best adapted—to be in fact more certain than bark in the manner that bark is commonly administered. An emetic of white vitriol or zinc is also effectual in many cases; and cobweb maintains preeminence above all other remedies.

As the fevers which occur in the phlegmatic temperament, continued or periodic, are not accompanied, according to the description at *page* 86, &c. with symptoms which are ordinarily thought to au-

thorize the employment of some of the means that I employ for their cure, I shall state, in a few words, the manner by which I was led to adopt them, with the reasons which induce me to adhere to them and to recommend them to the attention of others. A pneumonic form of disease fell under my observation in the year 1801, while I superintended the hospitals of the army depot of recruits and invalids then stationed at Chatham. The disease was epidemic for some months—and it was considerably fatal. The symptoms were not urgent, or such as indicated any high degree of what is usually termed inflammation authorizing abstraction of blood in large quantity. Abstraction of blood was not therefore carried to any extent at the first appearance of the epidemic; but, in opening the bodies of those who died of the malady, appearances presented themselves which threw a new light upon the subject, and which induced me to make trial of a different mode of proceeding. Marks of suppurative inflammation and actual abscess in the lungs were observed in many instances; but in others no marks of suppurative inflammation were to be seen: the substance of the lungs, on the contrary, was agglutinated into a mass, so as to be rendered in a manner impermeable to air; the cavities of the thorax and frequently the pericardium were filled with water; masses of coagulated lymph were found in some of the larger vessels,—black incohesive blood in others. From this view of the case, I considered the disease in question as a violent form of adhesive inflammation, and I thought myself

CHAP. VII.

warranted, from what I had seen, to make trial of blood-letting as a remedy—either absolute or auxiliary. The blood was generally of an azure colour as it began to flow from the vein; it became gradually more florid in the course of flowing; and before the arm was bound up it was sometimes of a bright scarlet red. The blood that was first abstracted presented in the vessel, into which it was received, a mass of uniform appearance of loose cohesion, of azure colour—and with little separation among the parts; the second had more cohesion, less of the azure colour, and a greater proportion of serum; the third had often a firm cohesion and bright colour, with a large proportion of fluid serum. With these changes in the appearance of the blood as it flowed from the vein, or, as were visible in the mass when received into a vessel and suffered to rest, corresponding changes were uniformly observed to take place in the activity and energy of animal action;—hence, reflecting on the reasons of the changes thus effected, I adopted abstraction of blood as a remedy, not only in the view of diminishing quantity and relieving from congestion, but as producing a change in the constitution of the circulating mass; whereby the whole organic series might be influenced, and urged to assume a new form of action corresponding with the change induced upon the fluids. This forms the basis of the practice, and this is the explanation of the grounds on which it was adopted. The other parts of the treatment are obvious and easily understood, viz. warmth and friction in the

view of exciting action, and of supporting the actions that have been changed by the previous abstraction of blood; alkalescent diets and drinks, &c. These directly dissolve mucus where they come in contact with it, or they attenuate it as conveyed into the circulating mass.—The plan of cure now detailed was digested in some degree under the influence of theory; but it has been applied in practice with a success that leaves no doubt of the propriety of recommending it to the notice of the public.

CASE I.

July 25th, 1814,—George Rook, R. Artillery, aged 25, admitted into hospital early this morning. He complained severely of pain in the head; the bowels were constipated; there was no appetite; the tongue was foul; the pulse full and frequent. Three days ago he felt chilliness, tremors and other indisposition; but he continued at his work which was that of a blacksmith. He was bled, soon after admission into the hospital, to the extent of three pounds:—fainting supervened: he was immersed in the warm bath for twenty minutes; and, on being taken out of it, was submitted to cold affusion. When dried and disposed in bed, a draught, consisting of tincture of opium, æther, and aqua ammoniæ acetata was administered; and, at an interval of two hours, six grains of calomel, followed by a solution of purging salts. Noon,—castor oil,—the calomel and salts not having had effect. Evening,—the skin hot and dry; the pulse full,—not open; thirst considerable; bowels refractory. Bled to the extent of two pounds: tepid bath,—chilly while in the bath,—removed from the bath, disposed in bed: a stimulating clyster,—small evacuation in consequence. Midnight,—tension and uneasiness in the abdomen,—no acute pain: infusion of senna, salts, and aq. ammon. acet. at frequent intervals during the night: friction of the abdomen and extre-

CHAP. VII.

mities with mercurial ointment. July 26th,—slept a little during the night; one small evacuation by stool; the tongue moist, thirst diminished; torpor pervades the whole of the animal actions; the action of the heart and arteries sluggish,—not energetic. Castor oil: frictions of the whole body with salt and vinegar: a blister to the nape of the neck. Noon,—copious evacuations by stool; some repose, and a slight moisture on the surface; thirst moderate. Effervescing draughts at intervals: frictions repeated—salts and senna. July 27th,—some sleep; occasional confusion in the head—with tendency to wander; tongue red; constant desire to drink: no effect from the salts and senna: castor oil: a clyster ordered if necessary. Noon.—the lower bowels emptied by the clyster; no effective stool; complains of uneasiness and weakness; countenance not satisfactory. A strong purgative, viz. tincture of aloes and myrrh with the addition of an ounce of oil of turpentine. Evening,—the bowels freely opened; the pulse more vigorous: effervescing draughts continued. July 28th,—some rest; no stool in the night; tongue somewhat brown; gums hot as from the effects of mercury; castor oil—to be followed by a solution of salts. Noon,—no effect from the castor oil and salts; dejected; sense of weakness; the pulse deficient in vigour; spasms; tremors. The purging tincture of aloes &c. repeated: frictions of the whole body with mercurial ointment and oil. Evening,—copious evacuation by stool;—great relief: effervescing draughts: camphorated mixture: frictions of the surface. July 29th,—good night,—confused and *distrait* in waking from sleep; a copious evacuation by stool;—sickness and vomiting while on the night chair;—great relief; tongue dry; a slight increase of thirst; gums hot and somewhat painful; no increase of saliva. Evening,—profuse perspiration; slight cramps or spasms of the limbs. July 30th,—slept well; bowels perfectly free,—much better in every respect; relished his food,—bread and tea. Noon,—took soup or bouillon with liking. Evening,—better. July 31st,—no fever; complains of feelings of weakness. August 1st,—improves: 2nd,—slight accession of fever,—increased heat: diaphoretic mixture. August 3d,—better,—no fever:

bark with acid of vitriol. August 4th,—bark with acid of vitriol: cold affusion of salt water.—Recovered.

CASE II.

October 8th, 1813.—Johnstone, R. Artillery, aged 43, attacked suddenly about noon with symptoms of fever and admitted into the hospital in the evening. The head-ache was excruciatingly severe—with severe vomiting; the pulse strong and frequent; thirst great. Bled to the extent of four pounds: head relieved; the skin dry. Calomel gr. v., followed by a purging draught: tepid bath: blister to the head. October 9th,—little or no sleep; no pain of the head,—no pain of any kind; the skin and even the lips still dry; the tongue whitish; no appetite for food: calomel and antimonial powder every fourth hour. October 10th,—no pain; some sleep; perspiration; lips rather dry; no appetite: camphorated mixture with saline mixture every third hour. October 11th,—well: 18th,—discharged in perfect health.

CASE III.

October 31st, 1814.—W. Watson, R. Artillery, aged 34, seized with the usual symptoms of the fever of the season; the pain of the head very severe,—with some uneasiness in the chest and impediment in breathing; the pulse sharp and frequent. Bled to the extent of four pounds: tepid bath: calomel, followed by a solution of salts: blister to the head. November 1st,—no material relief: bled to three pounds: carbon. ammon. gr. xii., magnesiæ alb. gr. xxv., aquæ puræ un. ii., adde succ. limon. un. i½. November 2nd,—the head-ache abated considerably after bleeding; it returned in the night with violence;—it is now easier; but there are general painful sensations all over—with feelings of weakness or inability; the thirst moderate; the pulse sharp. Bled to the extent of two pounds: tepid bath: the effervescing draught repeated. Noon,—threw up the draught: the body rubbed all over, by two orderlies,

CHAP. VII.

with salt and vinegar: calomel gr. x.: small doses of salts and senna. Two o'clock,—the first dose of the purging mixture rejected: clyster:—copious evacuation of a dark feculence: purging mixture repeated. Evening,—considerably better; sickness continues, but not severe. R. tinct. opii. gutt. 40, æther drach. i., aq. ammon. acetat. semunc., mistur. camph. un. i.—to be taken at bed time. November 3d,—indifferent night; two evacuations by stool in the morning; nausea distressing; sensations of weakness—despondence; apprehension of danger—almost confirmed in the opinion that he is dying. Bled to the extent of twenty ounces—much against his will: purging tincture of aloes and myrrh. Noon,—seems better; no pain or uneasiness; no evacuation by stool: infusion of senna, &c. every other hour. Evening,—straining on the night chair without effect: stimulating clyster: rubbed with stimulating oils: purging tincture of aloes and myrrh with the addition of half an ounce of aq. ammon. acet. November 4th,—passed a good night; several stools; nausea removed; tongue rather foul—with nausea: diaphoretic mixture. Noon,—head-ache considerable: calomel gr. x. Evening,—purging tincture of aloes and myrrh semunc., tinct. opii. gutt. 40, æther drach. i., mistur. camph. un. i. at bed time. November 5th,—slept well,—perspired freely; no head-ache; no evacuation by stool: purging mixture repeated: anodyne at bed time. November 6th,—recovers. *Note.*---Occasional head-ache and giddiness for a few hours for some time. Discharged on the 28th of the month fit for duty.

CASE IV.

September 26th, 1814.—A——w, R. Y. Rangers, had felt more or less of head-ache for three days, but he bore up against it in hopes it would go off. He took his regular routine of duty, and, when on guard, was seized about noon with excessive pain of the head, giddiness, insensibility, and total privation of power of the limbs. He was brought to the hospital about two o'clock, almost insensible. Bled to the extent of four pounds: the head shaved and blistered: bathed in warm water: pur-

ging mixture. The pulse was hard; the blood flowed freely;—no faintness or disposition to faint ensued, and not much relief. Six in the evening,—the head-ache continues—the pain chiefly in the forehead; the eye is full, but not inflamed; he has no power over himself; the thirst is still great; the tongue not foul; the lips dry; the skin dry; the pulse frequent, small, irregular; no faintness from mobility, but total want of power and energy; one stool from the purgative; heat natural; blood buffy and cupped on the surface. September 27th,—no sleep; the skin dry, but not parched; several motions downwards; head-ache continues—chiefly felt at the forehead; the pulse strong, hard,—not full—frequent; the heat above natural,—not high; thirst great; lips dry; tongue rather rough,—not foul; countenance heavy and dull. Bled to the extent of two pounds: the pulse slower and softer,—faintish,—yawned frequently, and had a copious evacuation by stool after the arm was bound up; general perspiration. Noon,—the pain of the head lessened, but not entirely removed; thirst less urgent; the skin soft and moist; the lips still dry; the pulse still febrile, but strong and expansive. Evening,—more animated; the eye and countenance cheerful; the lips moist; thirst diminished; skin moist, or rather perspirable; scarcely any head-ache; no nausea; pulse febrile,—soft and regular. September 28th,—slept quietly in the night; no head-ache; some pains about the calves of the legs; general perspiration; pulse febrile, but regular; no final crisis, but no urgent symptom. Evening,—some return of appetite; no pain of any kind. September 29th,—improves; some desire for food. September 30th,—better. Evening,—convalescent. October 6th,—discharged.

D. SECTION IV.

Cure of Cachectic Forms.—Progressive.

The adjustment of a plan of treatment for the relief of the form of disease ordinarily termed ca-

CHAP. VII.

chexy, as arising under the action of a general febrile cause, forms a very important subject of medical investigation, but it is a subject on which I have not the satisfaction to speak with confidence. I do not here recommend that which I have actually done,—for it amounts to little; and I regret to add that, until a more liberal and a more enlightened policy shall dawn upon the minds of our rulers, the military physician must continue to wander in the fields of speculation, without finding the opportunity of proving the truth or falsity of his opinions by scientific experiments that require a wider range for proof than the wards of a military hospital.

From the facts which accidently fell under my observation in the course of my official duty, I formed and cherished the opinion that something might be done by the medical art for the relief, if not for the radical cure, of cachectic forms of fever; and, as the island of Trinidad, partly from climate, partly from the unhealthy position and the injudicious construction of the barracks in which the troops are quartered, has furnished, ever since it was possessed by the British, an unusual number of persons suffering from cachectic forms of disease, it was stated, in an official report submitted to the Commander of the forces in the year 1813, that between seventy and eighty of the regiment in garrison, viz. the Royal West-India Rangers, were then ill of this form of disease, the progress so far advanced that there were scarcely any hopes of recovery for them except by removal from the situation where they then were.

The end proposed might be attained in two ways, viz. by a long cruise at sea in different latitudes under a correctly adjusted regimen; or, by a removal to one of the islands within the windward island command. The first, though decidedly the best, was not practicable at the time; it was therefore suggested that the persons in question should be brought to Barbados, placed in a healthy part of the interior, submitted to a well arranged plan of medical treatment, with such regulations in regimen and discipline as might be supposed to conduce to the amelioration of the condition. The proposition was made in conscience, as a command of duty. It held out a promise of benefit; but it was not deemed important; at least nothing was done, and the cachectics of the Rangers dropped off from the sick list, at the rate of ten or twelve per month, until they all disappeared, their places being in the mean time supplied by others of a similar description from the operation of the causes alluded to, which still continued to operate. Such is the fact,—and it is not solitary. It forces the remark that while the military physician may, for the most part, treat the sick in what manner he pleases when the sick are in the hospital wards, his suggestions rarely meet with attention when they imply measures of a more extended view. General arrangements, even arrangements which relate to the department of health, are thought to belong to the power commanding, and the history of mankind proves sufficiently that official power rarely deigns

CHAP. VII.

to receive instruction from science,—of whatever importance, even to itself, that instruction may be.

It was intended, if the proposition alluded to had met with attention, to have digested a plan of treatment, regimen and discipline for the subjects in question, to have committed the execution of it to an officer of trust, and to have minutely superintended the proceeding through all its steps and stages. But, as nothing was done, I can only now say what was in contemplation to have been done, if the opportunity had occurred of doing it. As the disease under view exhibits a new form of accretion, viz. a congestion of fibrine, more like the brawn of pork than any thing else, in all the interstices of the cellular membrane, and generally in a more especial manner about the heart than others, the direct means of cure consist in resolving the accretion which, as it has different degrees of compaction and solidity, may be supposed to be effected in longer and shorter time and with more or less difficulty. It is necessary, with a view to effect the resolution, to endeavour to induce a condition opposite to that which exists; and, as the disease presents an appearance of undue cohesion and compaction of fibrine, the induction of the scorbutic diathesis, which is characterized by tendency to solution, may be thought to constitute the direct means of remedy. The principle of cure is plain: the difficulty lies in giving its execution; and, after it is executed, of giving due energy to the renewed action of health.

If this form of disease occur in a climate where the endemial tendency is strongly marked, for instance in the island of Trinidad, the first step in the process of cure consists in removing the subject from the source of the endemial influence; and, reasonably of removing him to a climate of opposite qualities to the one where the indisposition originated. The sea atmosphere implies a change of the greatest extent that can be attained in the same latitude; a cruize at sea, continued for some months in a vessel properly equipped and provided with all suitable means of remedy by medicine, or diet, has therefore the preference to others. But if the cruize at sea, with all its suitable appurtenances, cannot be attained, it is evident that the place chosen for residence on shore ought to be remote, in the qualities of its atmosphere, from that of the country or district where the disease first arose. With regard to remedies, abstraction of blood is not here recommended as one of dependence in primary effect; it is presumed that it may be useful, as second or auxiliary, by inducing changes in the qualities of the circulating fluid, particularly where abstraction is made with attention to the circumstances of the condition, and where the effect obtained from it is supported and improved by frictions of various kinds, viz. brushes singly, or with the addition of stimulating liniments. The warmer purgatives are here to be given occasionally, particularly the alkalized infusion of senna:—all the drinks to be alkalized by means of salt of wormwood. Bitters of

CHAP. VII.

various kinds may also be employed with advantage, viz. infusions of wormwood, seneka, scurvy-grass, &c.; and, as the main object can only be effected through diet and regimen, the diet ought to consist principally of what is salt and stimulating, —little nutritive, and not mucilaginous:—salt herrings have preference. It will be useful, according to this view of the case, to repeat the abstraction of blood at intervals, attending most minutely to circumstances previous to and even under the act of abstraction. It is probable that benefit might also be derived from mercurial salivation, particularly where congestions exist in the organs of the abdominal cavity; and there are grounds to believe that a well conducted course of nitric acid would likewise be useful in forwarding the general purpose. Exercise on horseback, or in carriages, and such exercises on foot as can be borne without fatigue may be supposed to be beneficial.—If found to be so on trial, they ought to be diligently pursued, followed by frictions with hard brushes in the manner of currying; and further, when the process of resolution has commenced, a course of chalybeates, aromatics, and attenuants may be instituted with prospect of benefit. If the means here suggested be combined and alternated, diminished or increased as occasions indicate, there are grounds to think that re-establishment of health will often be the result.—The practice recommended, it is necessary to observe, has not been brought to the test of experiment; it is only suggested for trial by

those who may be more fortunate in finding opportunity of trying it than the author has been.

E. SECTION V.

Cure of Cachectic Forms.—Retrograde—Liquescent.

The cure of fever, as it appears under the retrograde form, owes so much of its efficiency to arrangements that depend on the higher powers, that the science of the medical officer is frequently null; in as much as he is compelled to speculate on what might be,—not enabled to try experiment, and state from experience that he has done something that deserves to be recorded. If the form of disease in question be locally endemic during a certain season of the year, the first step to be taken, in instituting a plan of cure, obviously consists in removing the subject to a situation dissimilar in qualities to that which he then occupies.—This is the first step and it is the most important; but the execution of it depends upon a higher authority than that of the medical officer, consequently it cannot be calculated as a part of remedial means. The physician is ordinarily left to his own resources, viz. drugs and diets: with these he endeavours to do something; but he rarely, I believe, succeeds in doing any thing that is effectual. The disease proceeds in its course: it is sometimes more simple in its form, sometimes more complicated, but it usually

CHAP. VII.

terminates fatally, of whatever form it be, unless opportune changes of weather, particularly in the more northern latitudes, conspire with other contingent causes to stop its progress before it has advanced to the point from which there is no return. I have not myself had much opportunity of seeing this form of disease at the quarter where I principally resided; and my official situation did not permit me to remain a sufficient length of time in the districts where it prevailed, so as to institute a plan of treatment on reasoned grounds, and to bring the truth or falsity of the opinion I might assume on the occasion to proof by fair experiment. The plan therefore, which I now propose is rather an induction from reasoning on the laws of animal action, than a relation of trial and ascertained practice;—I am further aware that parts of it are such as will not fail to offend common opinion. The proposition of abstracting blood, from a subject tending to dissolution, will be deemed an extravagance; and I do not deny that, without accompaniment, the simple abstraction will often be the means of accelerating death; but managed, as I propose that it should be managed, it is not only safe, but it may even conduce materially to facilitate the cure of the disease. My own experience satisfies me that the blood undergoes a change under the act of abstraction. The change, as is proved by what occurs when the blood is received into a cup and allowed to rest, is sometimes, from a loose and dissolved mass, to a mass that is comparatively firm and co-

hesive. This effect commonly follows the act of simple abstraction: it is assured, and carried to a higher point of effect by modes and accessory means, employed at the time of abstraction to stimulate and excite the activity of the living principle. Impressed with the truth and importance of this observation, I recommend bleeding in the case under view; but I caution against bleeding through a large orifice and in large quantity at one time. The quantity of twelve or fourteen ounces is here a high measure; but it is not a measure that compromises safety, particularly if stimulation be applied to the subject under the act of abstraction.—One bleeding is rarely sufficient:—the repetition of it may be made at intervals with safety and beneficial effect. —Among the forms of stimulation to be employed while the blood flows, or soon after the arm is bound up, sprinkling the body with cold salt water, actual affusion of cold water, washing the skin with salt and vinegar, salt and lime juice, or *eau de Cologne*, followed by gestation in the open air in a spring carriage, are the most important and the most easily commanded. Acid of vitriol, bark, alum, zinc, steel, tincture of aloes and myrrh as a purgative, powder of charcoal singly or with rhubarb, stand among the principal of the internal remedies.—Such is the outline of the plan of cure that I have sketched. I have not had the opportunity to give it a full trial; but from what I have seen, when parts of it have been applied in a secondary or contingent manner, I think myself warranted to recom-

CHAP. VII.

mend it for trial, and even to speak with some confidence of its probable good effects.

CASE.

April 24th, 1815.—B——n, York Chasseurs, admitted into hospital to-day; had been indisposed for some days prior to admission. The symptoms of the fever were moderate:—the head-ache was not severe; the pulse was frequent; thirst considerable; skin dry or damp—inelastic; tongue red: purgatives, diaphoretics, &c. May 5th,—extremely weak; the pulse small and frequent,—scarcely perceptible, at least scarcely to be counted; the tongue red and clammy; the skin cold and damp,—the surface without animation; no pain; sleeps a good deal; takes nourishment; has not much thirst; and is perfectly sensible. May 6th,—pulse scarcely perceptible; not delirious,—does not speak. Evening,—pulse perceptible; skin moist; swallows drink; sensible. May 7th,—delirious in the night,—now sensible; pulse just perceptible. May 8th,—died in the morning. *Opened.*—The pia mater somewhat inflamed; adhesions at the falx; water in the ventricles and at the base of the brain in considerable quantity; the substance of the brain flaccid and soft, or liquescent; the lungs filled with black blood; the liver soft; the omentum like an old dirty rag; the colon exceedingly distended through its whole extent, and gangrened in some places, but without appearance of inflammatory action having existed previously.

F. SECTION VI.

Cure of Fever in Subjects of the Serous Temperament.

The forms of fever, which occur under the predominance of the serous temperament, are nume-

rous and important; but the principle which directs the cure does not differ, or it differs only in mode from what has been already stated as applying to others. The serum of the blood, which is here the ostensible subject, is the seat of acrimonies; and, as acrimonies are destined for expulsion, the effect of the morbid act is necessarily manifested upon organs of excretory function. The forms of fever which occur under the serous temperament manifest their action under two leading features, viz. constriction of the excretory organ and diminution of the excretory discharge; or, undue relaxation and excessive profusion—generally or locally. The constituted action of the organ is changed or perverted in both these conditions. The first step of cure in both obviously consists in the arrest of the perverted action, whether that action be increased or diminished; the second, in the application of means which solicit action analogous with that of health. I conceive the principle to be understood from what has been already said, and shall therefore only notice in a very cursory manner the principal of the means to be employed for the attainment of the end. The application of the means,—viz. the combinations and alternations must be left to the discretion of the acting physician, the modes being so much varied in the various forms under which fevers of the serous temperament shew themselves that specific direction, on a subject so undefined, would tend to embarrass rather than to elucidate the proceeding.

CHAP. VII.

It is advisable, where a person of the serous temperament is submitted to medical care soon after the commencement of fever, that the body, whether there be undue constriction or undue relaxation, be immersed in a warm bath. This is done for the purpose of equalizing action throughout the whole of the excretory system. When that end has been in some degree attained, a vein is to be opened in the arm, and blood abstracted in quantity sufficient to effect a change in the existing conditions. It is impossible to say *a priori* what the necessary quantity may be: the actual inspection of the case only can give an idea of it; but, in the case of relaxation, the measure can scarcely be supposed to exceed two pounds; in the case of constriction, three, and even four may sometimes be not more than sufficient. When the change contemplated has been completely effected, the patient is to be raised up and submitted to the affusion of cold water on the head and shoulders, wiped dry and conveyed to bed, an emetic given as soon as may be; and, after the vomiting ceases, a purgative—strong or gentle as circumstances may indicate.—The acetated water of ammonia in pretty large doses repeated at intervals, with plentiful dilution from rice or barley water, improves the good effect of the purgative. It moreover acts on the mixture of the fluids, and thereby maintains the excretory organ in activity. If the disease be not decisively arrested, or moved into a safe train of action by the process here recommended, it may be necessary to repeat

the bleeding, and to carry it to extent under the eye of the physician. It is generally proper to repeat the bathing—warm and cold at certain intervals, also to continue the diaphoretics and diluents, and such other forms of stimulation as are calculated to maintain artificial energy in excretory functions until the dangerous periods of the disease pass over.

The cure of fever in the serous temperament, like the cure of most other fevers, is a matter of easy accomplishment at the commencement. If two or three days have elapsed before it be brought under treatment, the difficulty is considerable,—sometimes extreme. The heat of the body is often high, acrid, caustic, and peculiar; and, in the advanced stages, the skin often becomes so dry and obstinately locked, as if the albumen of the blood were actually coagulated in the serous capillaries of the surface. I do not pretend to say, from ocular testimony, that this coagulation actually exists; but I believe it to be possible, and, from the density and peculiar compaction of the skin which refuses moisture to the most powerful diaphoretics, I consider it as probable. The instances of recovery from the extreme degree of exsiccation alluded to are few; and, where recovery does take place, the skin is long in regaining its permeability, its unctuosity, and its smoothness. If, instead of this singular density and compaction, the surface should be bathed with colliquative sweat, the danger is great, but not irremediable. A number of means present themselves for trial on this occasion; but, when I mention ab-

CHAP. VII.

straction of blood as one of the number, I do not expect many converts to my doctrine. It is not however a mere theory: I have some experience of its benefits and I have confidence in its power, especially if seconded by ablution with cold salt water, washing the body with vinegar and salt, lime juice and salt, herring pickle or other brine, aided by gestation in the open air in a spring carriage, frequent changes of bed and body linen; and internally, bark, acid of vitriol, alum, zinc, camphire, tincture of myrrh and aloes as purgative, wine, and other refreshing cordial as stimulant.—I have already stated my opinion respecting the effects which bleeding operates on the mass of the blood in changing quality by diminution of quantity; and, as organic actions depend on the impulse of blood, changes occur in the actions corresponding with changes in the nature of the impulse; in so much that if, to this change of impulse, be opportunely added suitable stimulations, the action, from feeble and languid, ordinarily becomes energetic and strong—and analogous with that of health; in other words, the disease is cured.

CASE I.

August 17th, 1813.—D.——, R. Y. R., admitted into the hospital about noon, having been attacked the day before with symptoms of fever. At the time of admission he appeared squalid and dirty; head-ache was severe, even to stupor: bled to the extent of twenty ounces; easier but not much; the skin hot and dry, arid and parched; the pupil of the eye contracted; the countenance sallow; the skin thick, harsh and disagreeable to the touch. Immersed in the warm bath; rubbed with soap

and scrubbed with brushes; the head shaved; a vein opened, and blood abstracted while the body was immersed in the water; cold water poured upon the head and shoulders; the body washed with salt and vinegar—and a blister applied to the whole of the head; purging mixture, ordered to be given at intervals until effect was produced. August 18th,—better: copious evacuations by stool; copious perspiration; intellect acute—and no head-ache. August 20th,—no return:—25th,—discharged.

CASE II.

August 14th, 1814.—B——n, R. Y. R., attacked at noon with severe head-ache,—the pain in the crown of the head, accompanied with vomiting, faintness, cold sweats, &c.: bled, but fainted before twenty ounces were abstracted:—vomited; the head-ache excessively severe; thirst excessive; the lips dry and pale; the countenance collapsed, withered and blighted; the skin dry, shrunk and without animation; the pulse frequent and irregular. August 15th,—bled largely last night; fomented with flannels wrung out of hot water for a length of time:—purgative mixture: head-ache relieved; thirst diminished, but still considerable; vomited once only during the night; several evacuations by stool; skin dry and rather warm; countenance full and expanded;—somewhat flushed; pulse febrile—frequent, but distinct. August 16th,—better: slept; perspired; tongue rather dry; thirst; pulse febrile. August 17th,—continues to improve:—18th,—better:—25th,—discharged.

CASE III.

November 1st, 1814.—B——, R. Artillery, seized suddenly with general numbedness, pain and spasm at the stomach and in the bowels, with such constriction about the throat as almost entirely denies passage to drink; pulse scarcely perceptible. Put into the warm bath; rubbed with soap and scrubbed with brushes: bled to the extent of three pounds,—not much, if in any degree, relieved. At an interval of some hours, immersed

CHAP. VII.

into the bath a second time, and more blood abstracted from the arm—the quantity not stated: somewhat easier. Evening, 9 o'clock,—respiration thick and short,—but not such as indicates impediment in the lungs; the pulse just perceptible—small and frequent; skin dry; thirst great; eye and countenance desponding and expressive of internal suffering: tincture of opium, æther, valerian, &c.; blister over the chest. November 2nd,—no sleep; vomited repeatedly during the night; now great thirst; respiration short; anxious and distressed as from suffering at the stomach. Noon,—bled while immersed in the bath; the quantity abstracted exceeding two pounds: it flowed freely, or rather ran out without action in the vessel, somewhat in the manner as if a cask of liquor had been tapped; respiration relieved; no pain; great thirst; mouth clammy; bowels open; vomits; skin less dry; pulse perceptible; heat natural; starts and wanders when he closes his eyes. Evening,—no vomiting since two o'clock; has slept a little; tongue clammy; bowels open; skin soft; heat natural; pulse more perceptible:—distinct. November 3d,—dosed in the night,—no sound sleep; bowels open; stools perfectly black; thirst diminished—but still considerable; no vomiting; pulse open—distinct and regular; skin moist, or rather damp;—sweat not fluid; no pain. Evening,—pulse low—not very distinct. November 4th,—dosed in the night; pulse more distinct; skin moist; no pain; thinks himself better. Evening,—has slept a good deal in the course of the day; the pulse distinct; no desire for food; feelings of weakness. November 5th,—sensations of weakness; did not sleep much; thirst considerable; tongue clammy; eye clear; no local pain; skin soft; pulse regular—distinct—not frequent. Evening,—some appetite for food; less thirst. November 6th,—Did not sleep much, but seems upon the whole to gain; thirst diminished; the tongue tremulous. Evening,—a copious dark-coloured stool from castor oil; took soup with relish; little increase of thirst. November 7th,—better:—8th,—no complaint:—12th,—discharged.

G. SECTION VII.

Cure of Fever, the Action of which is manifested principally in the Sentient System.

The organ of sense and intellect is more or less morbidly affected in most conditions of febrile disease. The sensibility is sometimes preternaturally latent or suppressed, sometimes preternaturally excited. The mode of action has relation to one or other of the forms of general constitution described above, but we cannot pretend to ascertain with precision the manner and degree of the connexion; for, though the latent or suppressed sensibility appear to be more common in the phlegmatic temperament, excited sensibility in the sanguine, irritated and irregular in the serous, yet we should probably err if we attempted to calculate, at least trusted to calculations made on that ground.

The means which present themselves as remedial in these different forms of action are of two general classes, viz. such as excite action by ordinary rule, and such as excite new forms of action by a species of unknown power, which supersedes, and in a manner absorbs in itself the action of the disease. Suppressed sensibility—corporeal or mental, is sometimes conspicuous as a prominent symptom at the commencement of fever: it sometimes continues characteristic throughout—with occasional risings and fallings during the course; sometimes it appears

CHAP. VII.

in distinct and regular paroxysms; and sometimes it is continual, but does not appear until a late period. The converse, viz. excited sensibility, follows a similar rule, sometimes early and periodic, sometimes continued, but late in appearance. The mode of latency presents itself under two general views, viz. obscure and dormant as an original act, or deficient and void as exhausted by preceding violence. The converse is also characterized by two modes, viz. mobility without force—connected with different forms of tremors, faintings, &c.; or irritation with violence—connected with spasm and convulsion.

In the first form of latent or suppressed sensibility, considered as a mode of febrile action, the application of artificial heat, more particularly dry heat, presents itself as an obvious remedy. The application of heat by means of the bath, water or vapour, is the most common. It has advantages as being the most diffusible and the most easily applied to all parts of the body in an equal degree, but it also has disadvantages in so far that it cannot be continued for a sufficient length of time to assure the effect. If the warm bath be the remedy, the temperature must be a high one—not less than one hundred degrees of Fahrenheit's thermometer; which, even high as it may appear to be, is not always sufficient to communicate the requisite comfort to the feeling of the patient, whose sensibility to the impressions of heat are now sometimes singularly impaired. The stimulating power of the warm bath is increased by

the addition of ammonia, essence of mustard, and above all *eau de Cologne*. It is unnecessary to add that friction of the skin, particularly of the extremities, with soap and hard brushes, augments the effect: wine, spirit, or other stimulating cordial given internally conspire to the same end—often very beneficially. The change contemplated is not soon effected; consequently the body is not to be removed from the bath in less than one hour, or one hour and a half,—for it is not expected that a strongly repressed sensibility can be adequately restored in less than the time stated. When the patient has been removed from the bath and conveyed to his apartment, the air of which is supposed to be pure and of a high temperature, the body, after being thoroughly dried, is to be rubbed for some time with flannels heated at the fire to the highest bearable degree of heat, afterwards rubbed with volatile liniment, or washed with *eau de Cologne*, clothed with flannel, covered with bed-clothes, and supported on each side by a half-burnt billet of wood wrapped in flannel, hot bricks being placed at the feet, and bags with heated sand or bran applied to the stomach and over the whole of the abdomen. Wine or other cordial is to be given at discretion: the purging tincture of myrrh and aloes, with the addition of an ounce or more of oil of turpentine, stimulates by its warmth and opens the bowels with more or less relief,—even with some effect upon the general actions of the system. Blisters are often serviceable; and, as there is no risk

CHAP. VII.

from the experiment while the body is under the influence of artificial stimulation, I hold it to be advisable to open a vein in the arm in the view of changing the condition of circulation in the interior organs. I have not indeed made the experiment; but I believe it may be safely made under the circumstances stated; and, from analogy, I presume it may be made usefully. If torpor and inability follow highly excited action, exhaustion of power rather than dormancy is implied in the condition; consequently rest, cordial refreshments, sprinkling or washing the body with cold water, and gestation in the open air are the suitable remedies,—the most permanent restoratives of the exhausted condition and such as imply the fewest chances of danger in their management.

If sensibility be increased—mobility manifested in an extreme degree by tremors, faintings, &c. accompanied by delirium or without delirium, sprinkling the body with cold salt water, gestation in the open air in a spring carriage or other suitable conveyance, cordial wines—repeated at intervals, and opium—in quantity sufficient to impress the system lightly have appeared to myself to be on all occasions safe, and on many occasions effectual remedies. If sensibility be increased, irritation violent, manifesting spasms and threatening convulsions, a warm bath of moderate temperature, fomentations with flannels wrung out of hot water and friction of the whole body with cold olive oil are obvious remedies,—and they are not ineffectual ones:—they

sooth, and if they do not entirely remove, they rarely fail to moderate. Bleeding from a vein, or cupping at the neck or temples is of service occasionally, but it is not primary in the plan of cure. Blisters to the nape of the neck, continued along the spine to the interval between the shoulders, are often of benefit. Opium, with camphire and James' powder in considerable doses, is a principal remedy; either under the existence of the disease, or as preventative of its recurrence when its character is periodic. Opium is beneficial, with the additions here recommended; but it is inferior to ten or twelve grains of pure and recently made cob-web, whether given with the view of repressing spasms, delirium and threatenings of convulsion, or given in the interval with a view to prevent the recurrence of these symptoms.

CASE I.

October 30th, 1813.—Walters, R. Artillery, aged 27, seized about four in the afternoon with violent cramp in the limbs:—before he reached the hospital delirium had become furious. The pulse was strong and frequent; the delirium wild and outrageous. Bled to the extent of six pounds: calomel, followed by a solution of salts: blister to the nape of the neck. October 31st,—uneasiness at stomach; vomited frequently during the night, but slept at intervals: the delirium removed by the bleeding; the pulse now nearly natural; the skin cool, but dry: solution of salts repeated: head shaved and blistered: blister to the pit of the stomach: tepid bath: friction of the whole body with hot oil after removal from the bath: clyster. Frequent copious evacuations by stool soon after the clyster. Evening,—anodyne draught with æther. November 1st.—easy

CHAP. VII.

in his feeling; bowels open; vomiting and uneasiness at stomach removed; sleep sound: saline mixture. November 2nd,—infusion of bark. November 9th,—discharged.

CASE II.

October 23d, 1813,—Arkins, R. Artillery, aged 24, admitted into hospital to-day, had been indisposed for two days previous to admission. He complained of head-ache and of pain in all parts of the body: the pulse was hard, frequent and peculiarly irritated; the tongue dry; nausea; vomiting; coldness and tremors to considerable extent and of long continuance. Bled to an extent exceeding four pounds: warm bath: calomel and rhubarb: clyster. Calomel and rhubarb rejected; one dark coloured stool from the clyster: tremulous; vomits at intervals. October 24th,—sense of coldness; cold perspiration; tremulous and agitated; vomits now and then; thirst considerable. October 25th,—sickness and vomiting in the night; no sleep; tongue foul; bad taste in the mouth,—nauseous, unusual taste; skin moist,—moisture clammy. Evening,—signs of commencing delirium—tremors, agitations; skin cool—moist; pulse irregular, agitated, fluttering; no vomiting. Seized with convulsions between eight and nine o'clock—and died immediately. *Opened* next morning.—No marks of disease in the substance of any of the abdominal viscera; a few red spots like heads of pins on the inside of the stomach—most numerous near the cardiac orifice;—no spreading inflammation. No marks of inflammation in the substance of the brain or its membranes; more water than usual in the ventricles:—the cause of irritation which occasioned the convulsion not discovered.

CASE III.

October 29th, 1813.—Smith, R. Artillery, aged 22, attacked with symptoms of fever and admitted to-day: delirious and wild, complaining severely of the head, stomach and belly—about the navel; pulse small. Bled to the extent of three

pounds: calomel and solution of salts: blisters to the head and nape of the neck. October 30th,—delirium removed; complains of great pain in the abdomen,—increased by pressure; vomits. Bled to the extent of twenty ounces while immersed in the warm bath: castor oil: blister to the abdomen. October 31st,—bowels open; pains removed. November 5th,—discharged.

CASE IV.

November 2nd, 1813.—Clarke, R. Artillery, aged 22, had drank to excess on the 1st of November, seized with giddiness, pain of the head and very acute pain in the breast;—brought to the hospital in the evening. The eye appeared red and inflamed; the pulse was hard, strong and frequent; the skin sometimes hot and moist, sometimes cool and dry; the tongue foul; the thirst excessive; the bowels torpid; nausea, vomiting, &c. Bled to three pounds; fainted under the flowing of the blood: pain of the head diminished—not entirely removed; the pain at the breast is still felt, but it is less severe; the skin is cool—with sensations of coldness, even after the warm bath and frictions with warm oil. Calomel gr. x.: solution of salts: warm bath repeated: blisters to the head and breast: body rubbed with hot oil. November 3d,—head-ache and pain at the pit of the stomach; pulse frequent, strong and hard; tongue foul; thirst great; bowels not freely open; evacuations small—with frequent desire for the night chair; vomits now and then. Noon,—bled to the extent of two pounds: pain of the head removed; a sense of weight at the præcordia,—irksome; throws up drink and medicine; the slightest motion, as turning in bed, occasions sickness; no evacuation by stool; griping pain about the navel. Sugar of lead ten grains, chrystals of tartar two drachms, a quart of boiling water—a wine glass full every two hours: he rejected the first dose; pulse quick and frequent —not weak, but not expansive; sense of heaviness at stomach continues. Evening,—thirty drops of tincture of opium added to the solution of sugar of lead. November 4th,—rested pretty well; no more vomiting; skin warm; one small evacuation by

CHAP. VII.

stool; tongue clean; eye clear; sense of weight at stomach still continues. Calomel and extract of colocynth at intervals: mercurial ointment rubbed into the thighs. Evening,—four copious stools; no vomiting; skin open;—moisture fluid and free; pulse expansile; no pain; took soup with relish. November 5th,—slept well during the night; no pain or uneasiness; gums hot and painful. November 6th,—considerable salivation; no fever. *Note.*—The salivation was troublesome for eight or ten days; when it ceased, he was discharged apparently in health. He returned on the 23d of November, complaining of violent head-ache, giddiness and vomiting. He was bled until he fainted; the fixed pain of the head ceased, but shooting pains with vertigo still occur at times: bathed and blistered: calomel and salts. November 24th,—eye clear; tongue foul; thirst considerable: pulse open; skin moist; bowels costive: castor oil:—the oil operated. November 25th,—better: 26th,—better: 27th,—no complaint:—recovered rapidly.

CASE V.

March 19th, 1814.—Gribant, aged 27, admitted into hospital on this morning, complaining of head-ache and giddiness, with universal tremor, nausea and vomiting; pulse irregular, small and frequent. Bled to the extent of four pounds:—faint,—the pain of the head relieved: warm bath: calomel, followed by a solution of salts. Noon,—salts rejected; nothing retained: warm bath repeated,—rubbed with soap and scrubbed with the brush,—removed from the bath; a draught with laudanum and æther. Evening,—not relieved; giddiness and confusion of the head distressing; vomiting troublesome: immersed in the warm bath: bled to the extent of twenty-four ounces: the pulse more regular; giddiness diminished: the body rubbed with warm oil: blister to the epigastrium: effervescing draught: twenty grains of charcoal with two grains of opium:—vomiting stayed for some time. March 20th,—uneasy in the night; no sleep; no vomiting; nausea continues; thirst considerable; tongue foul; no evacuation by stool: twenty grains of powder of charcoal

with fifteen of extract of colocynth. Noon,—stomach retentive; no evacuation by stool: clyster:—a small dark, fetid evacuation; skin soft,—cool; pulse more regular. Evening,—thirst moderate; skin moist; pulse improved: purgative repeated: enema. March 21st,—no vomiting; copious evacuation by stool during the night; tongue foul; pulse good; slept in the night: calomel and rhubarb: diaphoretic mixture. March 22nd,—slept well; skin moist; tongue clean. March 23d,—better: 26th,—discharged in perfect health.

CHAPTER VIII.

Convalescence.

CHAP. VIII.

IT will be proper, after what has been said respecting the cure of fever in its ostensible febrile character, to add a few remarks on the convalescence which follows and which precedes the perfect re-establishment of health. The subject is extensive and important, but in some degree speculative; for only a small part of the execution lies within the authority of the medical officer. The authority of the army physician rarely extends beyond the walls of his hospital; and medical suggestions, however well founded in reason and however well supported by experience, rarely make impression on those who bear high command in the military department of the state. For this reason I consider the subject under a double view, viz. as depending on hospital treatment in so far as that is under the power of the physician, and exterior arrangements in so far as

these are to be executed only with the approbation and support of the confidential organ of the government.

If such regulation obtain in the economical concerns of a given body of troops that every person, who is indisposed, be brought under medical care at an early stage of indisposition, that is, within twelve hours or less from the time of attack, and if suitable means of remedy be then applied under a full comprehension of the principle on which the effect depends, I think I am warranted to say from experience that the course of the disease will be speedily cut short, that the convalescence will be rapid and the recovery of health perfect. In examining the sick returns of hospitals, where the method of treating fevers recommended in the preceding pages was fully understood and carefully applied, scarcely one person in twenty remained on the sick list after the fourteenth day: many were discharged within the eighth; there were few instances of imperfect recovery, and none of dropsy or debility as a consequence of excessive evacuation and low measure of diet. This is an authentic fact—the evidences of its authenticity are still in existence. But while this is true on one part, it is further to be seen by the examination of the same returns in another that if time was lost at the commencement, or if the principle of the practice alluded to was not duly comprehended, the act, though executed, being executed only by routine, the purpose was not attained decisively:—the course was in fact protracted, the re-

CHAP. VIII.

covery imperfect, or foundations of valetudinary health were engrafted on the habit, the removal of which was often a tedious and difficult task—sometimes an impracticable one. I have stated generally that the system of treatment here recommended assures for the most part a speedy and decisive cure of the existing fever; but I must add at the same time that if that fever be infectious, and if the subject of it remain in the infected atmosphere of the hospital; or if it be endemic, and he remain in the centre of the noxious exhalations of the district where it arose, he is liable, however perfectly cured at the time, to suffer relapse—either in the same or in an altered form. Hence, as the cause of disease floats in the atmosphere, it is the business of the physician to watch the indications of its returning activity, and to anticipate the actual explosion by the application of the limited means which are placed within his command.

It is important, as facilitating medical labour and still more imperiously as augmenting the good effect of medical applications, that persons who suffer under the same form of malady be placed in the same ward; that they be removed from sick wards to wards set apart for convalescents in the first stage of convalescence; and at a farther period from the first wards of convalescence to the last, viz. wards probationary of the re-establishment of perfect health. By this arrangement, uniformity is obtained, not only in appearance but in reality—for the conditions are similar. An incalculable saving of medical la-

bour and a beneficial influence on the mind of the patient, as impressed with the idea of progressive amendment, are the obvious effects of the arrangement. The diets, regimen and discipline of the patient of the convalescent wards have a common basis according to the classes: whatever is extra exhibits a cause of necessity, and is applied to a purpose under an obvious rule of utility. With regard to discipline, the convalescents both of the lower and of the higher class are expected to rise at an early hour—not later than six in tropical climates. After they have been completely washed and combed under the eye of a ward-master, in a part of the hospital enclosure allotted to the purpose, they are to be assembled at breakfast according to their classes in the galleries of the wards which they occupy—if the hospital be provided with galleries; if not, in the ward itself after it has been cleaned and properly arranged. After breakfast, the convalescents of both classes are to be allowed to amuse themselves, or rather encouraged to amuse themselves with quoits or bowls, checks or any other game or pastime that has no relation to money gaming. The lower class of convalescents are to be allowed to repose on the bed whenever they are inclined to do so; the higher class only when they signify to the ward-master their desire of that indulgence. The dinner is to be served at a fixed hour; the material of the best quality and well dressed—of different scales according to the degrees of convalescence, but, upon the whole, under the allowed quan-

CHAP. VIII.

tity of the health ration.* A small glass of brandy or rum by way of liqueur after dinner, is upon the whole the best of the restoratives considered as a part of diet; inasmuch as it stimulates the digestive organ

* The subject of hospital diet is one of considerable moment, of such moment in fact that it cannot be allowed to pass on the present occasion without remark, especially as my opinion on the subject is not in accord with common practice. From my earliest observation of the economical management of hospitals, the value of what feeds a man in health appeared in general to be sufficient to find him sustenance when sick; for, if his condition required more delicate and in some cases more costly nourishment, it required so much less in quantity as ordinarily left a balance of value on the favourable side of the account. Impressed with this idea, and confident in my own mind that it was true in fact and safe in experiment, I proceeded, in the year 1796, to digest a plan of economical management for the hospitals of the Colonial and Foreign troops, which were added to the British army for service in the island of St. Domingo. The plan was simple, viz. a ration, suitable for sick persons, commuted *ad valorem*—fresh meat in place of salt, soft bread in place of biscuit, wine in place of rum,—with the power of augmenting one part of the ration, viz. rice and sugar, and diminishing another, viz. beef and bread, at the discretion of the medical officer. The plan is obvious and plain: it was carried into effect but not without opposition, for it disannulled a contract which, contrary to usage in the British service, had been made with Colonial colonels for the subsistence of the sick of their respective corps—made at a rate which might be considered as the extreme of profusion. By the plan substituted for contract, the sick of the Colonial troops were amply provided for, and the enormous sum of eighty thousand pounds per annum was saved to the British government. This may seem incredible; but it is true according to

to action without filling the vessels. The higher class of convalescents is to be sent to walk in the environs of the hospital under superintendence, for an hour or more at a convenient time after dinner;

---

the calculations that were made of the expenses of the plan projected and that annulled on this occasion.—The Russian auxiliary force, which made part of the expedition that invaded Holland in the year 1799, was the next subject of experiment. This force was cantoned in Jersey and Guernsey during the winter, and the sick in hospital were subsisted by means of a ration commuted *ad valorem*. The Russian officers and the Russian soldiers were perfectly satisfied with their medical treatment; and no expense was incurred on account of it beyond the expense of drugs and hospital equipment.—The daily expense of subsisting a sick soldier in Great Britain in the year 1801 appears, by estimates made officially, to have amounted, in the most economical of the hospitals, to two shillings and fourpence per man. It was reduced in the hospital for the army depot to a fraction under ten-pence, including washing, provisions, pay of servants, &c.; yet under a reduction so striking, no person, who visited the hospital and was competent to form judgment in the case, pretended to say that any thing useful in the way of nourishment or refreshment was withheld from the sick. The reduction amounted to about two thirds of the total sum expended; but in making this reduction, the value of the money saved was not at all, or not prominently the object of the author. The retrenchment arose as the consequence of applying just measure to every thing. It had been sufficiently proved to him in a wide field of experience that profusion, instead of aiding, had confused, corrupted and defeated medical effect in all the stages of the war 1793; and, convinced of this truth, he considered it to be his duty to state to the Chancellor of the Exchequer in the year 1804 that he had digested, and was ready to submit to the examination of competent judges, a sys-

CHAP. VIII.

the lower class encouraged to pursue such amusements within the hospital enclosure as do not imply exertion or occasion fatigue. Supper, whether it consist of tea with bread, gruel, arrow-root, &c.

---

tem of management for hospitals, according to which two thirds of the money expended on that account might be saved to the public. A view of the annexed return No. 1, furnishes conclusive proof that the assertion was not incorrect; for the expense of subsisting a sick man in hospital in the island of Barbados appears, from this return, to have amounted to four shillings and four-pence in the year 1803 when bread was at four-pence per pound, and to have been reduced to two shillings and two-pence in the year 1813 when bread was at ten-pence. From this, it may be fairly concluded that had market prices been the same in the year 1813 and in the year 1803, the actual expense of subsisting the sick would have been reduced by not less than two thirds of the amount. The economist might thus be satisfied with the money balance; and those of the military officers who, with the Commander of the Forces, visited the hospital once a fortnight, and ascertained the fact of treatment by actual inspection, cannot refuse their testimony to any one who may ask for it that sick men could scarcely be more comfortable than sick soldiers were in the hospitals at Barbados in the year 1813.—This proposition which, as now observed, was submitted to the Chancellor of the Exchequer in the year 1804, though ostensibly one of much importance, obtained no notice. It was a voluntary offer of information on a subject which I had studied, on which I had acted and on which I was entitled to have opinion. I believed in simplicity of mind that it was incumbent on the Chancellor of the Exchequer, who was then first minister of state, to give effect to the plan proposed if after rigid examination of its evidences it should appear to be founded in truth; or that it was his duty, as the first organ of the executive, to disgrace and punish its author if it were proved to be

is to be served at a given hour, and in the same regular manner as breakfast and dinner. An hour after supper, every person is supposed to retire to bed; and a lamp being suspended in the ward during the night, and a table placed in its centre with drinking glasses and jars containing drinks of different kinds, viz. rice water, lemonade, vinegar and water, and pure water, the convalescent may be left to repose until morning. Every convalescent is to be supplied with clean body linen every second day, clean bed linen once a week:—the higher class to be carried to bathe in the sea occasionally where the sea is within reach; the lower class to be bathed in the hospital bathing room, to be submitted to the shower bath, or to cold and warm bathing alternately, followed by frictions with oils, &c. as may be deemed proper.

If the crisis be decidedly marked, and if the activity of the moving fibre be completely restored with the ostensible termination of the fever, the causes which preserve life and maintain its vigour in ordinary circumstances, will be sufficient for the most part to establish and confirm the recovery of health. The causes which conduce to this recovery and re-establishment consist in temperance in eating and drinking,—a temperance approaching even to ab-

---

false or deceptious. Nothing was done; and the disregard of a proposition, apparently most important to the nation—if it imply nothing else, furnishes a most pointed example of the indifference of public servants to public interests.

CHAP. VIII.

stinence, viz. the food, light and stimulating rather than rich and nutritious, exercise in the open air in carriages, horseback, or on foot, active bodily employment, and a train of amusements of such character as interest the mind.

When fever has ceased, the recovery of health often proceeds in a regular and favourable course for a given time. Disease recurs suddenly, either precisely similar to the preceding or differently modified in appearance. It is more apt to recur at some periods or intervals than at others;—and, as this is an established fact, it is of some utility to ascertain what these periods are. The human body, as we learn from observation, experiences more or less of septenary revolution in the laws of its movement. The precise nature of the revolution we cannot ascertain, but it is in some degree connected with the changes and different phases of the moon. It is principally at septenary periods, viz. the seventh, fourteenth, twenty-first and twenty-eighth after the application of an acknowledged cause of fever that the febrile action openly explodes. The periods preceding new and full moon, exclusive of septenary influence, are also remarked for the invasion and relapse of fever: hence, the periods at which fevers are most liable to return being known, viz. seventh, fourteenth, twenty-first, twenty-eighth, with new and full moon, the means, best calculated to obviate the recurrence, deserve to be studied, ascertained and applied with attention at the suitable time. The means employed for this purpose are

different according to the theoretical systems under which different practitioners have been educated. There are some who, with a view to accelerate the recovery of health and strength, recommend full living, rich and nourishing diet—with a liberal allowance of wine; others enjoin abstinence, interdicting wine and all strong drink. Under the first plan of management, the habit fills apace and recovery goes on rapidly for a time. Relapse in such case recurs suddenly and unexpectedly—and the dangers of the relapsed disease are generally in proportion to the rapidity with which the habit has been filled. In a certain state of repletion, whether the more direct effect of full living, or the effect of gradual accumulation attaining an acme, at certain periods more than others, under a constituted law of the habit, explosion of relapsed febrile action occurs frequently about the fourteenth day from the crisis, or regular cessation of the original fever. Peruvian bark, with a certain allowance of wine, is the remedy of principal dependance with those who indulge in full living, after the cessation of fever, for the prevention of such recurrence. It sometimes appears to succeed, but it also very often fails. The relapses which occur under the circumstances alluded to are numerous, sometimes serious—the symptoms conspicuous in the organs of the abdominal cavity more than in other parts of the system. The English practitioner generally adheres to the rule of full living; the French and most other foreign practitioners enjoin a rigid abstinence during convales-

CHAP. VIII.

cence; they even enjoin laxatives at frequent intervals, cooling drinks and simple food, peremptorily interdicting strong wines or other strong liquors. Relapses are less frequent under such management than under the preceding, but recovery is slow, energy rarely restored until after the expiration of several weeks and even sometimes months. The balance of the account is however favourable in so far as respects the security of life.

Such is the outline of methods adopted by practitioners of different classes for forwarding and assuring convalescence from fever. That which I adopt, and which I recommend to others for consideration, seems at first sight to partake of both; but the means, though the same, are differently administered and administered with a different object in view. Where crisis has been perfect, little more is required to effect the re-establishment of health than well regulated diet and a correct observance of regimen. The diet of the convalescent from fever ought not, in so far as respects quantity, to exceed one-half of the health allowance; but it ought to be well dressed and well seasoned with spicery, calculated to excite the power and at the same time to maintain the action of the digestive organ. Together with a moderate and well regulated diet, a cup of strong black coffee, a glass of liqueur, or a glass of brandy after dinner may be supposed to be of service. Infusion of gentian, wormwood, eye-bright or other aromatic bitter at intervals during the day is also useful. Purgatives

are occasionally proper,—and the purging tincture of aloes and myrrh is the best of the forms employed with that intention. These, with due attention to exercise in open air, ablutions and change of linen, may be considered as sufficient to assure the convalescence of persons who are constitutionally sound, particularly where the form of the fever, whether continued or periodic, is regular and simple. But, where the character of the disease is such as is termed malignant, or where the patient is forced to remain in the atmosphere of an infected hospital or ill ventilated barrack, or where he is obliged to live within the sphere of swamp exhalation, the means for assuring convalescence must be of a bold kind and applied in such manner as to produce a decided effect.

Where the termination of the fever is obscure, the disease suspended rather than decidedly judged, medical aid becomes necessary, either to complete the crisis or to prevent the recurrence of the disease in a formidable shape. A little wine, a little bark, a little opium,—and even a gentle laxative has no useful effect where the movements of nature are thus undecided, or where the habit is exposed to the action of strong morbid causes. It is then necessary to agitate the system—to make impression—and literally to force a general tendency towards health. An appearance of tranquillity—a deceitful tranquillity foreboding an impending storm, often presents itself on such occasions. The danger may generally be read in the countenance of the patient,

CHAP. VIII.

but a transcript of it is not easily made in words. —The aspect for instance is lowering, the countenance clouded and grim, the eye dull and heavy —torpid and vacant, sometimes threatening and stern. The feelings are uncomfortable throughout, viz. horror and despondence without power of reference to distinct cause. The pulse is sluggish, differing little, unless in want of energy, from the pulse of ordinary health. The skin is cool, at least without impression of general and animating warmth. The functions of the bowels are irregularly and ineffectually performed. Appetite for food is diminished; the tongue is often white and slimy, sometimes red, clean, and in a manner swollen—saliva ordinarily thick and clammy. The unexperienced physician is lulled into security by appearances; the experienced recognises the danger, and if he has courage to act with decision he often succeeds in averting it. The existing condition marks congestion, or strong disposition to congestion in the venous system, approaching to stagnation, which terminates in the suffocation or oppression of the functions of important organs, viz. lungs, liver or brain. The preventative remedies against the explosion of a disease which rests on this basis, cannot be supposed to be of the feeble kind. Abstraction of blood presents itself among the first, either as principal or as preparatory; but the abstraction of blood, though necessary or indispensable, is not sole;—nor is it to be made without minute attention to circumstances, or without accessory

aids which increase and in a manner assure its good effect. The patient is here to be placed in the warm bath—the extremities at least in a tub of warm water; he is to be rubbed with soap and scrubbed with brushes; and, when the effect from the bathing and bleeding has been attained to such extent as is safely attainable, the body, after being dried and rubbed dry with flannels, is to be placed in bed, an emetic administered immediately if there be slime and foulness on the tongue, followed by a purgative, viz purging tincture of aloes with myrrh if there be signs of congestion in the organs of the abdominal cavity. Five or six grains of calomel, with the same number of grains of James' powder and six or eight of salt of hartshorn in bolus, may be given with a reasonable prospect of doing good, blisters being applied at the same time between the shoulders, to the inside of the thighs or other part.—If the means now stated be employed to sufficient extent, and applied with discrimination in the proper order of succession, the threatenings of impending disease here alluded to are usually removed, and things afterwards proceed in a smooth and regular train of convalescence. The effect is assured by alternations of warm and cold bathing, exercise in open air, bark, wine and well regulated diet.

Besides the treacherous and malignant condition of the convalescent stage now noticed, and which requires a bold and decisive treatment to prevent the recurrence of its dangers, the convalescent, from

CHAP. VIII.

fevers that are infectious, or that move under a periodic type, often suffers relapse about fourteen days, more or less, after the critical termination, especially where he continues to reside within the infected circle, or to inhabit the swampy district where the disease was originally contracted. Whether this relapse be actually a recurrence of the original disease, or a new disease arising from the infection of the noxious atmosphere by which the subject is enveloped, it is the duty of the physician to watch the progress of the convalescence with care, to examine the condition once a day or oftener, and to act with decision wherever he discovers the convalescent progress to be tardy. The appearance of the tongue, viz. slimy foulness, is an early index of the action of the cause of infectious fever. When present, the propriety of giving an emetic is indicated as the remedy best calculated to counteract the disease in the first steps of its progress. Experience proves its benefit; and I think I may venture to say that by means of strong emetics and purgatives, opportunely given and repeated according to occasion, especially as aided by ablutions and frequent change of apparel, a person may be generally preserved from relapse of infectious fever, though he actually live within the walls of an infected dwelling. The appearances of tardy progress of convalescence, or first beginnings of disease are not so visible on the tongue, after the termination of the periodic as they are after the termination of the infectious fever; neither is the power of the emetic and purgative altogether so de-

cisive a remedy; but still as the organ of digestion, in some way or other, furnishes the first and surest indications of approaching relapse, emetics and purgatives properly administered are the surest means of averting the contingency, at least of preparing a condition through which it may be averted. The periodic fever has, as already observed, a strong tendency to recur at the interval of a fortnight from the time it ceased or was artificially suspended; and it has appeared to myself, in anticipation of that tendency, to be an advisable measure to give an emetic on the twelfth, followed or not followed at a short interval by a purgative according to the circumstances of the case; and, when that has been done, to give two drachms of bark every third hour on the thirteenth and following day.—Warm and cold bathing alternated, exercise in the open air, such employment or occupation as, while it exercises the body also interests the mind, conduces much to the security of convalescence.

The conditions, now adverted to, relate to the progress of convalescence and prevention of relapse, where the febrile action has actually ceased of its own accord, or where it has been suspended by art; but it also happens—and not unfrequently that, instead of cessation, there is only conversion of action into another form, viz. a form not ostensibly febrile. The forms of conversion are numerous, but the history of them does not belong to this place; and I only remark in general that depositions, abscesses and congestions are commonly observed in the or-

CHAP. VIII.

gans of the abdominal cavity, where the disease has been treated, during its course, by stimulants, viz. bark, wine and opium without previous evacuation; œdema leucophlegmasia, &c. where it has been treated solely by antiphlogistics, more especially where a sufficiency of savoury food has been withheld during the convalescence.

I have stated, in a cursory manner, the principal of the means that are to be employed for the prevention of relapse, in so far as the application may be supposed to depend on the medical officer, viz. the exhibition of medicines, the adjustment of diets and all forms of discipline that are attainable within the walls of an hospital. These are not unimportant; but they go only a small part of the way in forwarding convalescence and in confirming health. The medical establishments of the British army are deficient in many necessary provisions in most scenes of military service; and they are destitute in the West-Indies of many that are essential, viz. that are necessary to save the life of the soldier while sick and under the actual pressure of disease, or that are available in accelerating convalescence and assuring recovery when the course of disease is arrested. As I have experienced the defects in the course of my service, it is my duty to say distinctly and publicly what these are. The task is ungracious; but if the case be stated in a clear and authentic manner, I cannot forego the hope that the Lords of the Treasury will condescend at no distant period to consider the subject with the at-

tention which it deserves. If it be desirable economy to save the lives of the military, I may venture to say that the expense of erecting and equipping hospitals, and of providing every thing which conduces to preservation or re-establishment of health will, in the course of a few years, present itself on the credit side of the account, provided the basis of the establishment be laid in science, and all the parts of the arrangement be committed to persons of knowledge and integrity for execution.

Hospitals.

1. It does not belong to this place to enter into a formal discussion on the subject of hospitals, and I only observe cursorily that, where an hospital is to be erected, the position and exposure are to be well considered by those who have knowledge to judge the effects of locality; that the body of the building be wide—the wards not less than thirty or thirty-two feet in the clear, and farther that a jalousied gallery—of eleven or twelve feet, be added to the whole circumference, making in all a roof of fifty-four or fifty-six feet; that the wards be of different dimensions, viz. some small and secluded for persons in the acute and critical stages of fever, others calculated to receive only two persons, viz. such as are offensive in themselves, or as are past hopes of recovery; that the whole be well ventilated, the windows jalousied and reaching from the ceiling to the floor; that the baths and kitchen be conveniently placed; in short, that all the offices and appurtenances be so arranged that every transaction connected with the sick and their treatment may readily fall

CHAP. VIII.

under the eye of the superintending medical officer. There is no military hospital in the West-Indies that comes up to, or even approaches to this description. The hospital at Barbados is the largest in the command. It is supposed to be the best; and, with the additions and alterations that have lately been made in it, the wards are comfortable and wholesome as wards, but the whole is incomplete and ill contrived as an hospital. The greater number of hospitals in other British islands are very defective; some of them indeed so wretched that the medical officer has it not in his power to apply the aids of his art with benefit to the subjects of his care.*

* It may seem strange that the military establishment in the West-Indies which, besides a Commander of the Forces, has a corps of Engineers, a quarter master general and barrack master general of general's rank with numerous assistants, should not have shown, except in the island of Grenada, any thing like science or purpose, beyond shelter from the weather, in the erection of hospitals in the Windward and Leeward island command; while an officer of the Navy, Admiral Sir Alexander Cochrane, has built an hospital at Barbados for the sick of the Naval service, which is not only superior to any British hospital in the West-Indies, but even superior in design and arrangement to any hospital perhaps in Great Britain. The position is well chosen, and the parts are so connected with one another as shows clearly that the Admiral perfectly comprehended what he was doing. There is nothing superfluous; and, except the omission of jalousies for the galleries, little is wanting to render it as complete and commodious as an hospital can be made. The execution does credit to the Admiral's talent and activity; and, as the motive which

CHAP. VIII.

Spring Carriages.

2. It is proved, by experience of the most authentic kind, that gestation, in the open air in spring carriages, is not only a remedy of value in certain stages and conditions of fever, but that it is of the first importance in forwarding convalescence. The fact is within the sphere of common observation and requires no formal illustration. No spring carriages were provided for the use of the sick and convalescent in the windward and leeward island command in the year 1812; and as there were grounds to believe that many persons confined to their beds, or to their wards from inability to rise up or to walk, languished, sunk and finally died that might have been saved had the means here alluded to been at the disposal of the medical officer, an official application was made to the commander of the forces, stating the benefits that might be obtained from such provision, and requesting that one or more carriages, according to the extent of the garrison, might be furnished to each station for the purpose specified. The requisition was not refused as being improper or unnecessary; but it was not executed, and the chances of recovery from various forms of disease were thus evidently circumscribed.

---

prompted him to the undertaking marks the benevolence of his character, so the responsibility under which he undertook it marks the boldness of his mind. He did not shrink from doing what he judged to be right and useful in dread of penalty. He had not the sanction of the Treasury,—and he was aware of the consequence which attaches to that neglect.

CHAP. VIII.

Change of Place.

3. Change of place and situation, viz. removal from one Charibean island to another, though actually a more healthy one, is often followed by more or less of indisposition in those who are well. Change from one island to another, even to a less healthy one, is often, indeed generally followed by amendment in the health of those who are sick. There are some of the islands where periodic fevers—intermittent and remittent, are epidemic to great extent at certain seasons of the year; others, where regular intermittent is scarcely known. There are also some islands, or particular districts in other islands where the dysenteric form of fever chiefly prevails; others, where this form of disease rarely if ever appears. Further there are islands, or parts in the interior of almost every one of the islands where diseases of any kind are rare, at least rarely dangerous. Impressed with the opinion of the benefits which judicious changes of climate might effect on the health of the troops, the author proposed, in his official report of inspection submitted to the commander of the forces in the year 1812, that convalescent depots, for the benefit of the whole command, should be formed on the healthiest spot of the most healthy of the islands, viz. one for convalescents from periodic fever, and one for convalescents from the form termed dysentery. It is obvious enough that removals should be made from the islands or districts of islands, where the periodic forms prevail, to those where such forms are little known; and from those, where dysenteric affection is common, to such as

rarely show instances of this disease. The proposition, reasonable in itself and obvious to common sense, was not formally negatived; but it remained without execution which amounts to the same thing.

4. The removal of persons from one island to another, while under precarious convalescence, has for the most part a decided influence upon recovery. A voyage or cruise at sea, in a vessel properly fitted up for the reception of sick, properly provided with diets and refreshments, and placed under the direction of a skilful medical officer, promises still greater advantages. From the trials that had been made of cruising at sea for the benefit of health, sufficient conviction was impressed on the mind of the author that a large and well appointed vessel, placed under the orders of the chief medical officer, and employed to cruise with invalids in different latitudes as his judgment might direct would, in all probability, furnish the means of saving from death, and even of restoring to effective service a considerable number of persons who, as the case now is, inevitably perish. A vessel of this description was therefore included among the requisitions submitted to the commander of the forces in the year 1812, on account of the medical department of the windward and leeward island command. It met the same fate as the preceding—not directly negatived, but not executed.

Cruise at Sea.

The comparative return, No. 1, annexed to this sketch, shows very distinctly that mortality among British European troops has diminished considerably

CHAP. VIII.

since the year 1812; and it moreover shows that the diminution has been more considerable at Barbados than at any other station in the command. The difference, it may be presumed is partly owing to the advantages of hospital accommodation, partly to more prompt attention to commencing disease than obtained at most other places. The average mortality at Barbados, during the years 1812, 1813 and 1814, compared with the average mortality of the nine preceding years, appears to have decreased by nearly two-thirds of the total amount; and there is reason to believe that had spring carriages, convalescent hospitals in the healthiest parts of the more healthy of the islands, and vessels, properly appointed and suitably equipped for cruising at sea with a certain description of convalescents, been placed at the disposal of the chief medical officer, the mortality among European troops, reduced as it appears to be, might have been farther reduced—probably by not less than one third. This opinion, which is supported by facts of fair inference, seemed to myself to be so important that it was submitted to the medical board in England, to the commander of the forces in the West-Indies, and even to the commander in chief of the army. From the manner in which it has been stated, it deserves to be rigidly investigated; and if it prove, after a just investigation, to be properly founded, the dread of the climate of the West-Indies may be dismissed from the minds of the military, if government be disposed to do every thing that may be done. As the case now

stands, the medical art has the power of arresting the course of fever in vigorous subjects of sound natural constitution; it is destitute of the means of conducting to health, through a tedious convalescence, such as are debilitated and constitutionally diseased.

The mortality among troops in the West-Indies has often alarmed the British nation. The dread of climate has in fact operated to such extent on some occasions, as in a manner to suspend the progress of recruiting, and even to induce officers to resign their commissions rather than take their chances of West-Indian service. The subject is important in various points of view. It deserves national attention; and that it might obtain it, the Hon. Cochrane Johnstone submitted a motion to the House of Commons, in the year 1807, strongly urging to a consideration of it. The motion was made by a person who was locally acquainted with the West-Indies, who had been a civil governor, who had held a military command in that country, and who was besides a man of discernment and knowledge beyond the common class of officials. The subject was discussed; and, after discussion, the motion was withdrawn: the then minister of war, (Lord Castlereagh,) with an assurance peculiar to himself maintaining in the face of strong appearances that there were no grounds for interference,—adding with self-complacence that his Majesty's minister was wise and vigilant, that such measures had been taken, and such things had been

CHAP. VIII.

done that mortality was already reduced by a great proportion—(I believe) by one third, but that the House and Nation might be satisfied that nothing would be left undone, until the enemy, as he was pleased to call him—disease and death, was driven from his last hold,—or rhodomontade to that effect. The annexed return No. 1, which is an official document, shews how the case stands. If the assertion of the right honourable Secretary was not correct at the time, the reports of inspection of hospitals and barracks submitted to the Commander of the Forces in the years 1812 and 1813, the substance of which, it is presumed was transmitted to the minister for war and colonies, sufficiently evince that nothing had been done which was promised. The enemy—disease and death, still held his dominion, or more properly speaking perhaps, the habitations of men—barracks and hospitals, were thrust into the centre of his domain.*

* The superior salubrity of the interior parts of most of the islands in the West-Indies is known to every person who has resided in that country. The fact is so well established, and the use which might be made of the knowledge of it is so important to the interests of the army, that it has been frequently pressed upon the notice of military commanders. As the case now is, some stations are more healthy than others; but the healthiness of locality has not in any instance perhaps determined the choice of position. Salubrity is only secondary in the view: it was reserved for an officer of the Navy, Admiral Sir Alexander Cochrane, to give an example of its primary importance. Sir Alexander was appointed Governor of the island

It may seem to be irrelevant to the subject of this work, and not decorous towards the higher authorities of the state, to hold the language now held. It may be free, but I must beg to say that it is not spoken in the spirit of insubordination. The preservation of the health and lives of British soldiers is a national concern. It belongs to my profession, and it has been my express office, to study the nature of the causes which act upon the health of troops,—to note and to appreciate their power and their effects. My official statements on the subject have been made in all cases without reserve; but

---

of Guadeloupe at its capture in the year 1810. The principal part of the military force was stationed at *Basse-terre*, the seat of government. It suffered prodigiously from sickness; and as the cause of the sickness was obvious, viz. accumulation in ill-placed and ill-constructed barracks, Sir Alexander, with the benevolence which marks his character and the boldness of mind which does not balance between what is right and what is deemed regular, built a barrack in an interior position with a view to remedy,—and, from his authority as Governor of the island, at the expense of the colony. The position, though not the best that might have been found, was comparatively good; and the effect was so favourable that the Royal York Rangers, the corps which was quartered in Fort Matilda at *Basse-terre*, was apparently saved from annihilation by simple removal to the newly erected barrack. It was a good act; but it was not a solitary one. Sir Alexander deserves a civic crown for his kindnesses to the army while he acted as Governor in Guadeloupe:—they amounted in many instances to the saving of life by attentions to the sick and those recovering from sickness.

CHAP. VIII.

they have not been made with exaggeration, or stronger showing than the case demanded. It is left to others to decide, whether they have been made without knowledge, or whether those who delayed to give them execution have been indifferent to their duty. But whatever may be fact, or whatever may be opinion, I speak from my own conviction, and I should be abject and cowardly in the cause of humanity, if I were withheld from stating truths and suggesting measures, which have a tendency to diminish the amount of human misery, through fear of offending the ministers of state. There is sufficient evidence, in the history of military service, that European troops may be so stationed in the greater number of the islands in the West-Indies as to suffer little from sickness; and there is also evidence, in the history of hospitals, that the medical art is an art of value and may be so applied as to reduce mortality from sickness, when it does occur, to comparative insignificance. Much I am convinced may be done; but nothing I am aware will be done until the organ of power submit itself to be guided by the light of science. When that may happen I do not pretend to foretel; for science, particularly the science which sheds its benefits on the common herd is more than despised, —even the path in which it is permitted to tread is circumscribed. Overflowings of benevolence are obnoxious to rulers; and, in all ages of the world, from the time of Prometheus to the present day,

chastisement has been the lot of the humble who suggest innovation, even the innovation of doing good.*

* It is much to be feared that the recent and lamented death of Sir James Leith, Commander of the Forces in the Windward and Leeward island station, may retard the execution of any arrangements that might have been projected for the improvement of the medical concerns of that command. Sir James was a man of a comprehensive and liberal mind, of a benevolent disposition; and he was not so incased in the armour of power as to be impenetrable to medical suggestions, which had the show of truth for a basis, and utility for an object. He was candid and manly in manner; and he did not hesitate to express his conviction that establishments which, by their provisions, contribute to save the health and lives of men, though expensive of money in their adjustments, are ultimately economical of the strength and treasures of the state. Impressed with this idea, there is reason to think that had his life been spared he would not have ceased to labour; and there are grounds to believe that with the professional assistance of Dr. Fergusson, the zealous and intelligent officer who superintends the concerns of health in the Windward and Leeward island station, he would have succeeded in effecting measures through which the climate would have been disarmed of its terrors—in so far as respects the British army. The thing is not impossible—not even difficult of execution, if medical science were permitted to have a voice in military councils, and if medical men were furnished with the means of doing their duty to its full extent.

PART II.

History and Cure of Febrile Diseases as characterized by different Forms of Local Action.

THE sketch of the history and cure of fever, detailed in the preceding pages, refers to fever as a disease of the organic system acting on a general basis. I am indeed aware that fevers rarely occur where some one part does not suffer more prominently than others in all stages of the course; but I term the disease general, where these predominances are fluctuating and contingent; local, where the predominance is perceived at the commencement, and where it continues uniformly prominent throughout. The cause of the equality or inequality of the perverted movements, excited by the influence of a febrile cause in the different organs of the system, is obscure, nor do I pretend to explain it: I only take leave to suggest that it apparently depends on the equal or unequal condition of organic susceptibility existing at the time the morbid cause is applied, or,

that it explodes into action,—a condition constitutional or contingent, as depending upon the operation of more general or more contingent causes to which the movements of animal life are exposed.—The forms of febrile disease connected with prominent local action are numerous: I shall only in this place consider those that are common and important.

CHAPTER I.

Forms of Fever, the prominent Symptoms of which are manifested in the principal Organs of the inferior or Abdominal Cavity.

SECTION I.

A. *Gastric or Bilious Remittent Fever.*

CHAP. I.

The gastric, or bilious remittent fever is one of the most common, and one of the most important of the febrile forms which occur in armies. It belongs to all countries, and it is endemic in the West-Indies at all seasons of the year,— especially among native subjects and those who have been so long resident as to be acclimated: it is, however, more common in the autumnal months on extensive alluvial plains, than in dry, mountainous and hilly districts during winter and spring.

The gastric fever manifests its action in a greater or lesser degree in every organ within the abdominal cavity. It occurs under every temperament of habit which extends to the general system; but it is more common under the phlegmatic and serous than the sanguine. It owes its origin to endemic causes more general or more local. It runs its course and terminates favourably or fatally as may be; but it is prone to assume a new form and a new quality, as the product of its action, with the concurrence of slight causes in the latter season of the year, more especially in climates of a low temperature. Hence it often assumes the infectious form of action in protracted campaigns in temperate latitudes; and, when thus clothed with the infectious property, it propagates itself from person to person, either by direct communication, or by the medium of substances that have been in contact with the person infected. But, though the gastric fever often becomes infectious after a manner that may be termed artificial, it is only to the form which acts on vessels of serous secretion, most probably on the subtile, invisible and imponderable secretions, that this character can be supposed to attach. The predominant temperament, under which the gastric form occurs, so modifies appearances as to produce seeming contradiction in the history of the symptoms, and materially to embarrass description, unless the characteristics of temperament be kept continually in view;—if that be done, the description maintains consistency through-

CHAP. I.

out.—In subjects of the sanguine temperament, for instance, the febrile movements are comparatively regular, the course short, the termination critical—by sweat and hypostatic urine; in the phlegmatic, the movements are comparatively obscure, the course protracted, the termination undecided, the recovery slow and imperfect; in the serous, the symptoms are comparatively irregular and fluctuating, alternating between constriction and relaxation, the sensations irksome or painful, the termination more or less perfect—by excretion, cutaneous or alvine.

History.

The commencement of the gastric form of fever is marked, like the commencement of most other fevers, by more or less of cold and chilliness. The exacerbations, where exacerbations and remissions are distinguishable, are often but not always noted by slighter sensations of cold,—seldom by rigor, and seldom by noticeable sensation of cold where paroxysms and remissions are obscure. The functions of the organs which occupy the abdominal cavity are those principally disturbed at the commencement of this form of disease, and they are those which continue disturbed throughout for the first period, or first seven days. At that time, the form of action frequently changes, or is in fact often transferred to another series of parts,—most commonly to the sentient system, viz. organ of intellect or organ of loco-motive power.

Besides sensations of chilliness, the common precursor of fever, the gastric form is more than others distinguished by a bad taste in the mouth, viz. bitter

or mawkish, by nausea and vomiting,—sometimes vomiting of bile, sometimes vomiting of viscid phlegm; by aversion to food,—sometimes by abhorrence at the sight or smell of it. Thirst is irregular, sometimes great, sometimes not materially increased. The tongue is ordinarily foul, sometimes slimy, brown or yellow, sometimes cream coloured or of a milky white—the surface studded with patches of a meal-like substance; sometimes it is covered with viscid saliva; sometimes it is rough and dry; and sometimes its appearance is not materially changed from what is natural. In some cases, the foulness, which covers the tongue from the commencement of the disease, increases gradually as the course proceeds,—sometimes moist, sometimes dry, but gradually acquiring thickness and substance until the time of crisis, when, separating, it falls off and leaves a clean and healthy looking surface underneath. In this case, a sign of considerable reliance for calculating the progress and prognosticating the issue of the disease is drawn from the condition of the tongue; in others, the appearances of the tongue are so little remarkable as to furnish no very decided indication of the issue, even of the existing condition. The tongue ordinarily becomes smooth and moist at critical periods: it also becomes moist—and often clean, where the fever changes form, that is, where the morbid action suffers transfer to another series of parts. Where the disease is long protracted, the tongue, after the eighth or ninth day, sometimes

CHAP. I.

becomes dry, smooth, red and glossy; sometimes dry, black, parched and rough; and sometimes it is covered with a black pellicle or crust—irregularly moist or dry.—The stomach, besides nausea or sickness, often suffers other distress. It is sometimes inflated, sometimes tender of the touch, or impatient of pressure, sometimes sunk or hollow—with anguish and inconceivable anxiety. The hypochondria are distended in most cases, especially in the advanced stages of the disease—tense and tender of the touch—or indolent. The distention often extends to the whole of the abdomen, sometimes accompanied with costiveness, oftener with watery and irregular, ineffective purging. Instead of inflation and tension, the abdomen is sometimes collapsed as if it were empty,—a condition generally connected with anxiety and restlessness of the most agonizing kind. The function of the bowels is usually unnatural—costive on some occasions, even obdurate and constricted as in *colica pictonum*,—open, or loose to excess in others. The evacuations are often small, ineffective, sharp and acrid,—or watery without feculencc; sometimes they are copious and bilious—the bile on some occasions pure and yellow, and so excessive in quantity during the period of exacerbation as if the whole febrile action had been turned upon the biliary secretion. In other cases, the evacuations, while bilious, are small in quantity, of a dirty yellow colour,—sometimes green, sometimes brown, sometimes dark or blackish, sometimes thin and

acrid, sometimes thick and pultaceous—greasy and scarcely feculent. The urinary discharge is changed, sometimes scanty, sometimes copious—more or less bilious. The pulse varies according to the predominance of the temperament. It is not frequent, as a febrile pulse, in the sanguine and phlegmatic habit. In the former, it is free and expanded; in the latter, often torpid and obscure. In the serous, it is often irregular and sometimes inordinately excited, particularly within the abdominal cavity, where the pulsation of the descending aorta strikes with the force of the pulsation of the heart itself. The eye, according to the character of the predominating temperament, is bright, brilliant and animated—dull, torpid, unexpressive—the white of a dingy pale considerably tinged with yellow;—the veins are sometimes turgid, sometimes not. The aspect of countenance is often of a dusky pale colour, sometimes dry, yellow and withered—as if dirty in spite of washing, more particularly in subjects of the serous habit; sometimes it is suffused with bloom as if artificially painted. The lips are usually thin, dry and somewhat parched. The skin is for the most part dry and harsh, sometimes it is clammy, damp and greasy;—it rarely has the softness and unctuosity that belongs to the skin of a person in health. The heat scarcely attains the standard of febrile heat on the extreme surface, particularly in the phlegmatic habit,—it is often high at the præcordia in the same subject. Heat is ordinarily high in the serous temperament, both to sensa-

CHAP. I.

tion and as measured by the thermometer—often sharp, acrid and pungent, fluctuating and unsteady. —The above symptoms constitute the basis of action of the gastric form of fever. They rise and fall in periods; but they do not entirely disappear in what is termed the remission. During the exacerbation, anxiety, restlessness, anguish at stomach, vomiting, faintnesses, tremors, startings, delirium of various form and character—from violence and outrage to flights of fancy and simple incoherence, are more or less striking.

Recurrence or second Course.

The gastric form of fever is upon the whole a fever of long duration. A crisis or change frequently occurs about the seventh day. A recurrence then takes place, sometimes on the same, sometimes on a different base. It proceeds through another septenary period—ceases, or changes form. Another course commences;—and, in this manner, this form of fever proceeds through a series of septenary or other revolutions to a final termination in death or recovery —often at a distant period. If the morbid action continue on the gastric base, the symptoms are analogous with those already described,—differently modified perhaps, but radically the same. The tongue, in the secondary form, is often rough and dry, sometimes red, clean and glossy, sometimes covered with a skin or pellicle—generally black and often dry;—the teeth also are frequently covered with sordes. Thirst is irregular, sometimes great, sometimes not materially increased. The function of the bowels is also irregular,—the body sometimes costive, oftener

loose—even to purging; the stools various, viz. watery and copious, watery, scanty and ineffective, bilious—mixed or pure, sometimes black—and dirty like muddy coffee, sometimes black and smooth like liquid tar or molasses—copious or scanty. The hypochondria, and sometimes the whole abdomen is inflated, sometimes the hypochondria and the abdomen are preternaturally collapsed. The skin is usually dry and withered, or damp and greasy—constricted or relaxed: it is sometimes yellow as in jaundice, sometimes dusky green like a spanish olive. At a certain period, generally about the fourteenth day from the commencement of indisposition, the seventh from the change in the nature of the symptoms, the action of the vascular system expands, and crisis more or less perfect takes place, characterized by hypostatic urine and sweat, sometimes by alvine evacuation—bilious, yellow and feculent—sometimes bilious, black and copious. Farther, instead of terminating finally, the malady sometimes undergoes a slight alteration in form and proceeds through another—even through several revolutions. And when this is the case, or wherever the duration is protracted, the structure of the principal organs in the abdominal cavity is more or less changed; the recovery of health, even when the process is begun, is slow, and the effect is rarely perfect:—this is more particularly the case in subjects of the phlegmatic temperament.

Action transferred.

The gastric fever generally continues on the same base of action, but not always: sometimes the action

CHAP. I.

is transferred entirely to another system—sometimes only partially. In this manner, the gastric symptoms are suspended, and the morbid action appears on another series of parts, generally on the sentient, sometimes in the organ of locomotive power, sometimes in the organ of intellect. The modes are various. In one case, the moving power is so ticklishly balanced as scarcely to sustain action of any sort;—hence fainting, tremor, inability to speak or to swallow; sometimes it is irritated into spasm occasioning subsultus and even general convulsion. In another case, the whole force of the disease is manifested on the organ of intellect,—hence delirium of various description, watchfulness, coma, &c. And farther, instead of an entire transfer of action from one part or series of parts to another, the sphere of the primary disease is only extended:—the organ of sense or intellect is affected collaterally, the gastric system still maintains predominance.

DISSECTION.

The dissection of those persons, who die of the gastric form of fever, shews distinctly that the principal operation of the morbid cause is exerted on the organs which are contained in the abdominal cavity. The appearances are various, as might be supposed, in correspondence with the constitutional temperament of the individual. The peritonæum and its expansions are principal subjects of the action of this form of disease; hence the peritonæum is

often preternaturally dry and shrivelled, dingy or of a yellow tinge through all its extent, more particularly in persons of the serous temperament. The omentum and all the omental appendages are shrivelled and dry, and of a dusky colour: sometimes the omentum is diseased in a more particular manner, viz. red, thick and fleshy, sending out numerous elongations which form bands or swathes which occasionally compress the intestinal cavity. Congestion or apposition of new matter fills the interior of the more spongy organs, especially the liver, between which and the contiguous parts there is often more or less of adhesion. The morbid appearances are frequently mixed, viz. suppuration in one part, congestion or adhesion in another, so as to present masses of diseased structure throughout, more especially where the disease has been of a protracted course. The coats of the intestinal canal are often diseased, particularly the coats of the great intestines which are thickened through all their extent: the internal coats are sometimes ulcerated very extensively; on other occasions gangrened, or in progress to gangrene. In short, the appearances on dissection generally exhibit the effects of prominent local action in almost all the parts contained within the abdominal cavity, —suppurative, congestive, constrictive or excretive according to the temperament and predominance of the existing action—more local or more general, that is, manifested on one series of parts principally, on a whole organ, or on several contiguous organs.

CHAP. I.

CURE.

General Principle of Cure.

The cure of gastric fever moves in all its steps under the direction of the principle assumed in this work as the general base of medical practice, viz. arrest of diseased action by one set of means, and excitement of action analogous to that of health by another. The means, by which this purpose is effected, have been already explained. They have been applied to the cure of general fever in its different conditions; and they are applicable to the present with more or less of modification. The base of the diseased action is here local; hence subversion of the base is preliminary, that is, the first step in the proceeding.—I shall endeavour to state the application in as few words as possible.

In the first place, if the patient, whether of the sanguine, phlegmatic or serous temperament, be submitted to medical care at an early period, that is, within twelve hours from the commencement of indisposition, the body is to be immersed in a warm bath of moderate temperature, rubbed with soap and scrubbed with brushes over its whole surface, but more particularly on the abdominal region. When the skin is freed from impurity, its sensibility augmented by the heat of the bath and by friction, a vein is to be opened in the arm and blood abstracted, while the body is under immersion, to such extent as the circumstances of the case indicate, viz. until there be evidence of change in the form and

character of the febrile action, whether indicated by faintness or actual fainting, evacuations upwards and downwards, general relaxation of excretories, expansion, or other change in the condition of the pulse, general sensations of ease and freedom; and, more particularly, absence of sensations of uneasiness in the epigastric region and in all parts within the abdominal cavity. Three-quarters of an hour, even an entire hour is not too long for immersion in cases of the constrictive character—half an hour may be sufficient in others. It is indispensable that the local morbid action which characterizes this form of disease be totally subverted, that the tide of circulation be solicited to the exterior, and that action, when thus equalized, be maintained in equal tenor throughout the system, even artificially directed to the surface and supported in an especial manner in the excretories of the skin. Hence, when the patient's body is removed from the bath, wiped dry with linen towels and afterwards rubbed dry with flannels heated at the fire, it is moreover to be rubbed with warm oil or volatile liniment as conducing materially to the security of the purpose in view. The diseased action is supposed to be subverted by the proceeding stated; but, as it is liable to recur, such means are to be employed in prevention as give extra impulse to action in the abdominal organs. The means are stimulant; and, among these, the emetic may be reckoned one of importance. Emetics are safe after due preparation of the subject; and they are useful, not simply as evacuating what may be

CHAP. I.

offensive, but as exciting new and effective action in the alimentary canal or parts connected with it. The purgative presents itself as a remedy on the same ground of reasoning as the emetic; and, of the various kinds employed, jalap with calomel and some grains of James' powder, while easily administered, is one of the best. The operation is facilitated, and the effect rendered more extensive by dilution with saffron tea or other agreeable aromatic infusion; and, in subjects of the phlegmatic habit, by the addition of salt of wormwood or muriate of ammonia in repeated small doses. These rank among the securities against recurrence: a further security is derived from the action of blisters applied to the whole of the abdomen—at least to the epigastrium.

If the means here recommended be applied in time, and if they be applied under discrimination of circumstances, there is reason to believe that the disease, if not absolutely arrested, will be so changed as to leave no cause for apprehension on account of its dangers. The gastric fever often requires bleeding, and sometimes to great extent. We do little or nothing if we stop short of subverting the base of the irregular action, and there is sufficient proof in experience that abstraction of blood is the chief remedy by which we can expect to subvert it. Three pounds of blood abstracted in the manner recommended above will generally be sufficient to assure it; but absolute quantity cannot be defined by prescription. It is necessary to try—to judge by the effect arising under trial, and to ascertain that the

morbid foundations be actually moved before we desist.—Where the omentum and its appendages are materially implicated, the quantity required is often great—almost extreme, while ostensible symptoms rarely indicate the necessity.

Advanced Period.

If the disease be advanced to a late period, viz. to the fourth or fifth day, before it is submitted to medical care, the principle which directs the cure and the means which effect it remain the same, but more or less of variation is required in the mode of applying them. The gastric fever, as a form of disease prominently local, does not proceed to a regular and final termination by a process of the whole system. It is disposed by its action to vitiate the secretions of particular organs, to form local depositions or congestions, and, instead of terminating by open and decided crisis, to subside in a state of imperfect health. If this be so, it is evident that the existing form of action must be changed by means of art at whatever period the case may be presented; for, if left to itself, there is no fair prospect of a speedy and perfect recovery.

The first curative step is here the same as in the earlier stage, viz. immersion in a warm bath of moderate temperature, frictions of the skin, and particularly of the abdomen while the body is immersed, abstraction of blood—not to the same extent as at the early period, but still to such extent as acts on the basis of the disease, and thereby lays the case open to the action of other remedies. When the body is removed from the bath, rubbed dry with

CHAP. I.

flannels heated at the fire, it is to be rubbed with warm oils or volatile liniment, and laid in bed carefully covered with bed clothes—with a view to move and maintain a moderate perspiration upon the surface. As the main business of cure consists in turning the tide of circulation to the exterior, in maintaining it there and thereby disembarrassing the interior organs, the warm bath and abstraction of blood, while the body is immersed in the bath, are to be repeated as circumstances may suggest—the effect to be aided and assured by the application of blisters to the epigastric region, or even to the whole of the abdomen. If the force of the disease be principally exerted on the secreting surfaces of the intestinal canal, an emetic; and, after the operation of the emetic, a brisk purgative is of eminent service, more particularly if twenty or thirty grains of powder of charcoal be joined with it. On the contrary, if the principal action of the disease be directed to the peritonæal coat of the intestines, to the omentum and its appendages, or the interior substance of the larger organs, the effect of the emetic or purgative is very equivocal—not alway suseful. The remedy in such case consists in abstraction of blood, in warm bathing and friction, large blisters applied in succession to the epigastrium and abdomen, dilution with alkalized drinks, muriate of ammonia,—calomel, with a view to excite mercurial action and thereby to affect the general system of secretions, antimonials and other diaphoretics, which move and which maintain a regular and gentle perspiration

throughout—even to the extremities. When the force of the morbid action is removed from the gastric system, the circulation equalized by the means here recommended, aromatics and tonics, viz. bark, powder of arnica, and, at suitable intervals, acetated water of ammonia, muriate of ammonia, with such other addition as particular circumstances may indicate, rank among the means which prevent recurrence and thereby forward recovery, more especially as assisted by daily gestation in spring carriages in the open air.

Complicated Condition.

Further, if the disease be not submitted to medical care until a very late period, viz. the tenth or twelfth day from the commencement, and if the action be still prominent in the gastric system, the cure is difficult, and not conducted to a safe issue except through a tedious process, every step of it directed with care and circumspection. If the tongue be black and dry, covered with a sooty coloured pellicle, or if it be dry, red and glossy; the skin dry and parched—withered and harsh, or damp, greasy and inelastic; the eye surcharged with red veins, the white of a deep dingy yellow; the abdomen inflated, the hypochondria distended, impatient of the touch, or of pressure, &c. the disease may be considered as more or less complicated in its condition. If complicated, the first step in the cure obviously consists in simplification; and the principal means of effecting simplification consist in bathing and bleeding. Though there be sufficient evidence in experience that blood may be ab-

CHAP. I.

stracted largely—and with safety in late stages of fever, yet it is not here recommended that the abstractions at one time be large; it is however necessary that they be repeated frequently, and even carried to such extent at one time as to act impulsively on the organic condition. Besides bathing and bleeding, frictions of the body generally, and of the abdomen more particularly, rank among useful remedies in the case under view. Calomel, or other preparation of mercury administered with a view to excite salivation, daily gestation in the open air in spring carriages, the juice of deobstruent herbs, viz. dandelion, scurvy grass, endive, &c. dietically, and occasional purgatives of the deobstruent class constitute the principal means of remedy. Where the epigastrium is tense and painful to the touch,—the distention temporary, the purging tincture of aloes, with half an ounce or more of rectified oil of turpentine, moves the bowels with effect, and generally removes the tension more effectually than any other remedy that I know. Ablutions with cold water by means of the sponge are generally refreshing,—and they are upon the whole salutary: complete affusion is not prescribed according to my principle where there is cause to suspect internal congestion—and it is not recommended in the present case.

If the gastric fever be attended from the beginning with symptoms of nervous irritation, viz. tremors, startings, spasms, convulsions, delirium; or if symptoms of this description supervene at a later

period, the person who has duly considered what has been said in the preceding pages will be at no loss how to act. In the earlier stage, abstraction of blood, and, after abstraction, an emetic of severe operation often entirely removes the nervous irritations, spasms, and even delirium, more especially as aided by the affusion of cold water on the head and shoulders. The nervous irritations alluded to appear to depend, in a great measure, on certain modes of derangement in the biliary secretion that we cannot appreciate correctly; at least they often cease after copious evacuations by vomit and stool have been provoked by antimonial emetics. Where the irritations are violent, whether corporeal or mental, tincture of opium in large quantity, viz. eighty or one hundred drops, with camphire, James' powder and valerian in a large dose, often succeeds in allaying them, provided there be no permanent congestion or fulness in the brain:—ten or twelve grains of pure cobweb, given in pill or bolus, is still more certain and more constant in its effect. Where the nervous irritations make their appearance at a more advanced period, the curative process moves under the same principle; but it requires to be conducted with more caution, in so far at least as regards abstraction of blood. Emetics are sometimes beneficial in cases of torpor and coma; but purgatives of brisk operation are considered as of chief dependance. Blisters to the head and to the nape of the neck generally stand among the prescriptions of physicians; and, if the subject

CHAP. I.

has been properly prepared by previous evacuation, they contribute materially to safety. In cases of extreme weakness, inability to move or even to sustain change of posture without danger of fainting,—a condition not unfrequently connected with certain forms of gastric fever in its latter stages, sponging or sprinkling the body with cold salt water, even affusion, where the water is of a tropical temperature, is safe, refreshing and invigorating; but gestation in the open air in suitable carriages is of all other means, of which I have knowledge, the safest and the most effectual in the delicate and alarming condition of gastric fever here alluded to.

CASE I.

Jamaica, July 28th, 1815.—David Buchannan, 18th regiment of foot, aged 30, of a spare habit, has been three or four years in the island, and latterly employed as surgery man in the hospital, attacked yesterday with chilliness, nausea and uneasiness at stomach. The pulse is now frequent; the skin hot and dry; the tongue moderately clean; the body costive. An emetic, administered this morning,—a good deal of bile ejected. Two o'clock,—bled to the extent of twenty ounces: purging powder. Evening,—somewhat relieved after the bleeding; bowels not moved: purging powder repeated. July 29th,—much pain in the head and back; pulse quick and rather full; skin cool; tongue clean. Bled to sixteen ounces. Evening,—head-ache less severe; skin rather hot and dry; pulse soft—about 80 beats in a minute; body opened; thirst urgent: nitre, antim. and camphire every two hours. July 30th,—slept pretty well: no head-ache; slight pains in the back; pulse frequent and rather feeble; skin natural; body costive; tongue foul: salts. Evening,—the salts having had no effect, jalap and chrystals of tartar were ordered about noon—some evacuations

procured. The camphire, nitre and antimony continued—with thirty drops of tincture of opium at bed time. July 31st,—seems better; no fever: decoction of bark with camphorated mixture—and also a pill of calomel and antimonial powder every two hours. August 1st,—restless in the night: vomits every thing; pulse frequent and small; skin dry—not hot; evacuations by the bowels ineffective. Blister to the epigastrium: purging pills. Evening,—much the same as in the morning; the purgative has had no effect; pain and tenderness of the abdomen when pressed; strangury troublesome: purging injection; fomentations to the abdomen: a pill of calomel, opium and ginger every other hour. August 2d,—strangury relieved; other symptoms continue. The calomel, &c. continued with effervescing draughts occasionally. Evening,—no evacuation from the bowels: purging injection. August 3rd,—very weak; no ostensible fever; body costive: purging injection repeated: decoction of bark; camphorated mixture and Madeira wine each an ounce and a half, every hour. Evening,—seems better; body open; skin cool and moist; thirst urgent; no head-ache; no nausea: medicines continued. August 4th,—seems better; medicines continued. Evening,—much worse; vomits every thing; weakness extreme; pulse very feeble; one copious stool after the injection: saline draught with camphorated mixture, spirit of lavender and aromatic powder. August 5th,—some sleep; seems rather better; pulse very frequent; skin cool and open; body rather costive: purging powder, and, at a short interval after it had been taken, a purging injection. Evening,—confused and delirious since noon: blister applied to the head; three purging pills; now insensible; has had several evacuations by stool of a natural colour; pulse frequent and feeble; skin warm and open. Decoction of bark, camphorated mixture and wine continued. August 6th,—the delirium continued all night, and still continues; the pulse very small and feeble; the skin cold and clammy; four or five stools of a natural colour: decoction of bark, &c. continued with a pill of capsicum and two grains and a half of opium. Evening,—no material alteration. August 7th,—died at six in the morning. *Dissection of the*

CHAP. I.

body.—A portion of the dura mater, the size of a shilling under the left parietal bone, inflamed and adhering to the cranium; the vessels turgid—no extravasation; the choroid plexus flaccid—deficient of blood; the usual quantity of fluid in the ventricles. The lungs were of an unusually small size; the right lung adhered to the pleura—in appearance the effect of former disease. The abdomen was tense; the stomach, when opened, was empty; the intestinal cavity was inflated throughout its whole extent—with some marks of inflammation in different parts of the colon. The gall bladder was distended with dark coloured bile: the other viscera bore no particular marks of disease.

CASE II.

Jamaica, May 14th, 1815.—Abraham Trembling, R. Artillery, attacked about three in the afternoon with rigors, pain of the head, back and limbs. The pulse is now (evening) quick and strong; the skin hot and dry; the tongue clean; the body regular. Forty-eight ounces of blood abstracted from the arm, —faintness ensued. Calomel gr. vi., jalap gr. xxx. May 15th, The vein burst open during the night, and the blood continued to flow until faintness came on. The bowels have been moved twice; the pain of the head continues, but with less intensity; the pulse is full and intermitting. Bled again to the extent of forty ounces,—he became faint: a draught of æther with camphorated mixture. Noon,—pain of the head nearly gone; several evacuations by stool; skin cool; pulse moderate: sodæ sulphat. oz. i. in aquæ font. lb. ii.,— a wine glass full every hour. Evening,—the head-ache returned about three o'clock; the skin is very hot; the pulse frequent and irregular—intermitting: thirty ounces of blood abstracted. Fainting induced: a draught with æther and camphorated mixture administered; and a blister applied to the nape of the neck. May 16th,—slept pretty well; tongue clean; pulse 96 and regular; skin cool and rather moist; pain still felt at the fore-part of the head; about an ounce and a half of blood flowed from the nose. Blister applied to the crown of the head: calomel gr. vii. Eve-

ning,—the nose bled a second time; the head is easier, and the bowels have been moved three times; skin perfectly cool,—not cold. May 17th,—skin cool; pulse moderate; tongue moist: decoction of bark: sago with wine: porter. Evening,—about three in the afternoon slight increase of heat; a copious evacuation by stool after a clyster: anodyne draught at bed time. May 18th,—skin cool; pulse 86 and regular; slept soundly: decoction of bark, &c. continued. May 19th,—two or three evacuations by stool last night in consequence of a clyster; he notwithstanding slept well; no fever: medicines and diet continued. May 20th,—strength increases: medicines and diet continued: three bottles of porter in the course of the day. May 21st,—convalescent: half diet. June 6th,—discharged.

CASE III.

Jamaica, July 14th, 1815.—Jennings, R. Artillery, aged 29, seized, about an hour before he was admitted into hospital, with symptoms of violent fever:—much pain of the head and limbs, great heat of skin, pulse very full. Fifty ounces of blood abstracted immediately: calomel and jalap. Evening,—fever much abated; no effect from the calomel and jalap: solution of salts. July 15th,—febrile symptoms nearly gone; pulse regular; the bowels have been freely opened. Solution of salts taken at intervals through the day. July 16th,—convalescent. July 18th,—discharged.

CASE IV.

Barbados, September 22nd, 1814.—Luke Mordaunt, R. Y. Rangers, aged 26, admitted into hospital in the morning, complaining of severe head-ache, pain at the stomach and in the loins: the pulse quick and full; the skin hot; the tongue foul; the body open; thirst urgent. Calomel and rhubarb immediately: bled to the extent of three pounds. Blisters to the head, temples and stomach. September 23rd,—calomel and rhubarb repeated; castor oil likewise: six or seven dark colou-

CHAP. I.

red stools: head-ache and pain at the stomach relieved; pain of the loins diminished; pulse moderate; skin warm and dry; tongue foul; thirst abated. Calomel gr. ii., James' powder gr. iv. every fourth hour: effervescing draughts: tepid bath. Noon,—free from pain and free from fever: two ounces of infusion of bark every hour. Compound powder of ipecacuanha gr. xv. at bed-time. September 24th,—no fever: medicines continued. Evening,—accession of fever about four o'clock in the afternoon. Costive,—solution of salts with tartarized antimony and purging clyster. Eight o'clock,—one stool from the medicine; pulse very frequent, hard and full. Bled to three pounds. Tepid bath. September 25th,—six or seven stools; pulse frequent and strong; skin hot and dry; tongue foul and moist; thirst intense. Calomel and James' powder repeated, with a draught of aq. ammon. acetat., spirits of nitre and a small portion of tartarized antimony every other hour: tepid bath: bled to the extent of twenty ounces. Evening,—some tranquil sleep,—sweated copiously; pulse moderate; skin warm; body open: tepid bath and compound powder of ipecacuanha at bed time. September 26th,—sleep of short duration only; pulse moderate; skin warm—now dry; tongue foul; thirst abated; body open: medicines continued: tepid bath: (ten o'clock) fever declined. Two ounces of infusion of bark with half a drachm of aromatic spirit of ammonia every hour: (two o'clock) skin hot,—bark omitted. The body costive,—castor oil, and at a short interval, the castor oil not having operated, a dose of jalap and calomel,—it acted effectively; fifteen grains of compound powder of ipecacuanha at bed time. September 27th,—good rest; pulse moderate; skin warm and dry; tongue foul; body open. Calomel and James' powder with a diaphoretic draught of acetated water of ammonia every other hour; tepid bath; compound powder of ipecacuanha at bed time. September 28th,—good sleep; fever gone; gums hot and painful. Infusion of gentian,—two ounces with a drachm of the tincture three times a day. September 29th,—better: medicines continued. September 30th,—improving. October 17th,—discharged to duty.

CASE V.

Berbice, August 6th, 1814,—Luke Pavoenne, aged 26 years, of a spare habit, attacked this morning at nine o'clock with a paroxysm of fever, and brought to the hospital in the course of the day. Evening,—pain of the back and limbs; no head-ache; the skin moist; the pulse soft—90 in the minute: purging pills. August 7th,—fever came on in the evening and continued all night; the skin now dry; the heat considerable; the tongue very foul; much vomiting during the night; the stomach still irritable; the pulse 130—and strong; head-ache; two motions downwards: bled—six ounces only obtained. August 8th,—head-ache; frequent vomiting; pulse 120—small and hard; tongue much furred; two motions downwards; skin rather moist: effervescing draughts at short intervals; a drachm of bark every other hour during the remission. Evening,—during the remission, perspired a little and took some doses of bark: the vomiting has returned; the skin is dry; the pulse quick and small; no material head-ache: tepid bath; diaphoretic draught. August 9th,—pain of the head; eye yellow; abdomen painful when pressed; vomiting frequent in the night; skin dry; pulse very small—scarcely to be felt: blister to the abdomen; one grain of opium, with two of calomel, every hour; a spoonful of brandy every two hours; common clyster. Evening,—skin cold; perspiration considerable;—somewhat comatose; pulse scarcely to be felt; a stool from the injection; three convulsive fits in the course of the day: the blister rose well; no return of vomiting: camphire gr. iii., antimonial powder gr. iv., opium gr. i.; a spoonful of brandy every two hours. August 10th,—bilious vomiting in the morning; a convulsive fit in the night; the skin moist; the heat natural; the pulse cannot be counted; the tongue much furred; no complaint of pain: effervescing draught, followed by the camphire, antimony and opium,—to be repeated every third hour: injection:—bark: (ten o'clock,) vomiting continues; skin cold and moist; pulse 130,—very weak; no evacuation from the bowels since mor-

CHAP. I.

ning: warm bath; frictions with warm oil. Evening,—he has remained in a state of insensibility all day; the pulse 90 in a minute—more full and distinct; the vomiting restrained apparently by the brandy: skin warm and moist. August 11th,—died in the morning at three o'clock. *Dissection.*—A quantity of fluid resembling serum at the base of the brain; strong adhesions of the lungs with the pleura on the left side; the gall bladder distended; the cavity of the stomach and intestines overflowing with bilious matter; the spleen enlarged and adhering to the abdominal parietes, which were considerably inflamed in several places near the adhesion; the internal coat of the intestinal [redacted] was likewise inflamed in more places than one.

SECTION II.

B. *Choleric Form of Febrile Action.*

Another form of febrile action, and not an unimportant one, presents itself in hospital returns under the name of cholera. It occurs most frequently at a certain season of the year, viz. the end of summer and beginning of autumn, but it is not absolutely confined to it. The disease is formidable at its attack, and, in many instances, fatal in its termination. It consists in unrestrainable vomiting and purging, viz. ejection of every thing separated by the abdominal organs, which communicate with the cavity of the alimentary canal; hence, a mass of heterogeneous mixture and impurity, sometimes bile—more or less pure, sometimes dirty watery fluid flows out in such quantity as if the current of all the circulating fluids were directed to the interior secretion. The cholera is not a disease of long dura-

tion: it is strictly speaking ephemeral, terminating favourably, or showing a decided fatal tendency within twenty-four hours. The vomiting and purging, particularly the vomiting is irrestrainable: the retchings are often severe, accompanied with most excruciating pains and torments,—deadly sickness, anguish, anxiety, thirst to excess, faintness, —even fainting, spasms and cramps of the limbs of the greatest intensity. The pulse is ordinarily frequent and small and irregular—so[illegible] suppressed, or scarcely perceptible. The skin is cold; sometimes dry and of a death-like coldness—scarcely animated by the heat of a bath at 104 or 106 degrees of Farenheit's thermometer: sometimes it is cold and damp—covered with sweat of icy coldness as in agonies of pain. The countenance haggard and collapsed, the eye sunk and hollow, supplicate relief. —The intensity of the symptoms now described ordinarily remits in twelve hours, or less, from the attack; the pulse expands; heat returns to the surface of the body and the extremities, accompanied with sensations of returning life: flying pains and cramps in the limbs still continue with feelings of exhaustion in different degrees—the effect of the severe suffering that is past.

In the less fortunate case, the severity of the vomiting and purging abates for the most part in about twelve hours from the time of the attack; but it does not cease altogether. Nausea, faintness, anxiety and sensations of anguish about the præcordia still remain: the pulse continues frequent and

CHAP. I.

small,—sometimes so obscure as to be scarcely perceptible, or so frequent that it cannot be counted. The skin is cold,—in a manner impenetrable to heat: the eye is sunk; the aspect haggard and forlorn. Death takes place, sometimes within twenty-four hours, sometimes not for two or three days. There are even instances where the fatal event is protracted to five or six; and, in such case, there are intervals of respite; at least suspension of progress, but nothing that in ordinary language is termed remission.

DISSECTION.

The appearances, which present themselves on the dissection of those who die of the choleric form of fever, are principally observed in the coats of the alimentary canal and in the interior of the organs of spongy structure. The whole inside of the stomach, for instance, is often of a dark red,—such as may be termed black gangrene—without marks of preceding suppurative inflammation. The inside of the small intestines often present a similar appearance, and the peritonæal coat often exhibits the erysipelatous inflammation and gangrenous termination. The spleen and liver are often distended with black and fluid blood; the lungs gorged with blood of the same description; the gall bladder sometimes filled with black bile; the pericardium, in some instances, filled with dirty water.

CURE.

The symptoms which mark the disease termed cholera at the time of invasion, which continue during its course, and the traces of diseased action which remain in the body after death demonstrate sufficiently that a sudden and violent subversion of excretory function, with direct conversion of the tide of excretion upon the alimentary canal, gall bladder and other internal cavities, constitutes the base of action of this form of disease. The stomach is the organ upon which the morbid act is primarily and principally manifested. The effect evidently consists in increased discharges of excreted fluids, sometimes produced without violence done to the structure of the excreting organ, sometimes with force and convulsion to such extent as to exhaust the vital energy; and thereby to induce paralysis and death in the extremities of the venous system, constituting stagnation in organs of spongy texture, and black gangrene in membranous surfaces to greater or lesser extent.

The common method of cure of cholera is, I believe, directed to assist in the ejection of matter excreted, or to repress the excessive excretion by anodynes, or by astringent tonics. Neither of these views appear to myself to be exactly the true one. A mature consideration of the case in all its stages, viz. commencement, progress and termination, has led me to assume a different ground of proceeding.

CHAP. I.

Hence, instead of assisting to eject or of repressing ejection, I endeavour to counteract the effect of the morbid conversion upon the interior excretories, by exciting a new form of action on the excretories of the skin—a purpose effected principally by heat—moist or dry, frictions and other means of stimulation, external and internal.

In correspondence with this view, I therefore recommend that as soon as a person, suffering from the choleric form of febrile action in the major degree of violence, is submitted to medical care, he is to be immersed in a warm bath of high temperature; —such, whatever may be the degree of heat, as gives warmth and pleasure to sensation; for, if short of this, the effect is injurious rather than useful. Independently of actual heat, the stimulating power of the bath is heightened by the addition of mustard, spirit of ammonia, and still more agreeably, if it can be obtained, by some phials of *eau de Cologne*. The body is to be rubbed with brushes during immersion; chicken water, or other agreeable liquid given for drink, and drank as hot as it can be swallowed.—Water, that has been poured upon toasted oatmeal or bread, sits on the stomach when many other forms of drink are rejected. The same may be said of milk, particularly butter milk where there is great internal heat and great thirst. After immersion in a bath of warm water, or preferably of warm steam for half an hour or more, a vein is to be opened in the arm, and, if the blood flow freely, it is to be allowed to flow until there be some change in the pulse, and

some evidence of change in the condition of the existing symptoms of the disease. If the blood do not flow freely, the heat of the bath is to be increased, stimulating drinks and drugs given internally—the drinks as hot as they can be drank. The patient is generally easy while he is in the bath—the vomiting often then suspended;—consequently he is to be allowed to remain in it as long as it is agreeable, or until some change be effected in the condition of his case. If the blood has not flowed freely in the first trial, the vein is to be again opened at a short interval—the blood abstracted with caution under the guidance of the principle already explained. I am confident of the safety of the remedy, and I am convinced of its good effects where the steps in the proceeding are made with circumspection. The purging tincture of aloes and myrrh with the addition of oil of turpentine, taken undiluted in small quantities and at short intervals, is by far the most promising among the class of purgatives. It not only assists the expulsive action of the intestines, but it counteracts the gangrenous tendency in the interior coats of the stomach so much to be dreaded. When the patient is removed from the bath, wiped dry, rubbed with heated flannels and afterwards with hot oil, dry heat is to be applied to the surface of the body, in as perfect a manner as can be done, by means of half-burned billets of wood wrapped in flannel, hot bricks applied to the feet, hot sand in bags, or hot bran laid upon the stomach and upon the whole of the abdomen, hot and stimulating and

CHAP. I.

agreeable liquids being given internally at the same time for drink. If spasm, pain and anguish at stomach harrass the patient immoderately, æther, *eau de Cologne* and tincture of opium are useful; but there is reason to believe that a pill of ten or twelve grains of pure cob-web would give still more immediate and more effectual relief. I had not indeed the opportunity of trying it in this form of disease, not being possessed of cob-web when the more aggravated cases of choleric fever occurred; but from its well attested effects in other forms of spasm and irritation, I should not hesitate to give it in the present—and to be confident of its good effect.

CASE I.

May 11th, 1814.—Thomas Ritchie, R. Artillery, seized yesterday with nausea, giddiness, incessant vomiting and purging; pulse small and frequent. Bled to the extent of sixteen ounces,—fainting supervened: warm bath,—with friction of the body: the heat not increased,—the circulation not affected by it. Calomel gr. v.: draught with tincture of opium and æther: in an hour after a purging draught. The draughts and every thing else rejected,—the irritation of the stomach extreme; nothing retained, even for a moment: bath; frictions in the bath; and, after removal from the bath, a draught of tincture of opium and æther. May 12th,—restless; vomits every thing; pulse very small and sunk; extremities cold: anodyne draught —instantly rejected. Warm bath of sea water,—temporary ease: blister to the neck and to the stomach: solution of sugar of lead in small doses—often repeated: the vomiting restrained; thirst excessive—allayed in some degree by frequent draughts of milk which is retained. Evening,—salt water bath repeated. May 13th,—slept tolerably well; no return of vomiting; pulse

more expanded; more heat on the surface; bowels torpid: castor oil: salt water bath. May 14th,—very restless in the night; complains of pain of the head: bath of salt water: blister to the head: draught of tincture of opium and æther. May 15th,—better night; head relieved; body open: bath repeated; diaphoretic draught. May 16th,—slept tolerably well: medicines repeated. Evening,—nausea and vomiting, but not severe. May 17th,—restless; no sleep; several evacuations by stool; pulse small; great weakness: sea water bath and anodyne draught with æther. Evening,—camphire and nitre. May 18th,—bad night: wine, &c. May 19th,—sinks. May 20th,—died. *Dissection of the body.*—the lungs distended with blood, and of solidity almost equal to that of liver; the pericardium thickened and distended with fluid; the stomach inflated—the interior surface of a dark red studded with numerous gangrenous spots;—the intestines in a similar state—gangrened in many places; the gall bladder distended with black viscid bile; the spleen distended with blood—three times its natural size—rotten; pancreas rotten and diseased.

CASE II.

October 22nd,—C——n, R. Artillery, seized last night with sensations of deep coldness, vomiting and purging, cramps in the limbs and other sufferings. He was brought to the hospital in the morning, the vomiting then incessant; the countenance livid; the eye sunk; the pulse scarcely perceptible; the thirst excessive: put into a warm bath; a vein opened in the bath;—the blood flowed so reluctantly that the quantity of twenty-four ounces only was obtained. The pulse was scarcely perceptible; the skin cold, livid and damp—not susceptible of warmth from the bath; vomiting irrestrainable: æther, laudanum, and every thing that was tried rejected except milk which was retained for a while. He was rubbed with hot oil,—oil of turpentine, camphire and ammonia: flannel bags with hot sand were laid upon the stomach, abdomen, and applied to the extremities. Evening,—easier; less thirst; pulse

CHAP. I.

perceptible—frequent but regular; has not vomited since three o'clock. October 23rd,—no vomiting since yesterday; several evacuations by stool,—the effect of the purging tincture of aloes and myrrh with oil of turpentine; thirst abated; rested in the night; skin warm; pulse distinct—not weak; eye and countenance comparatively cheerful. Evening,—no appetite; eye and countenance improve; pulse distinct—not weak; skin warm; sensations of weakness. October 24th,—slept in the night; much better; no vomiting; the tongue moist—black, as if covered with powder of charcoal none of which he has taken; pulse regular—nearly natural in frequency and force; eye and countenance improve. October 25th,—slept the whole night; some return of appetite; no thirst. October 26th,—better:—recovered.

SECTION III.

C. *Dysenteric, or Intestinal Form of Febrile Action.*

Locality.

The dysenteric or intestinal form of fever is the most common, and one of the most important of the maladies that occur among troops, particularly among the troops which serve in the West-Indies. There are some of the islands in which it amounts to one half, even to more than one half of all the forms of acute disease which appear in the hospital list; there are others, particularly the moist and level countries of high but equal temperature where it is comparatively rare. It is moreover rare where the local endemic is of the higher grade of violence, especially in the more unhealthy stations on the sea coast in the unhealthy seasons of the

year. In many of these, it is scarcely ever seen: it is, on the contrary, common in broken and hilly districts, especially such as are intersected by ravines, and thereby exposed to vicissitudes of temperature, viz. calms and sudden gusts of wind. It is more frequent in cool and dropping weather than in sultry seasons and heavy rains. It is thus more common in spring and the beginning of summer than in the latter end of summer and beginning of autumn. But though generally influenced by season, it is notwithstanding sometimes epidemic—not in the usual season. A very malignant and a very fatal form of it occurs occasionally in spring in unusually dry weather, particularly in situations, whether low or elevated, which are struck by currents of piercing and parching winds descending through ravines from interior mountains.

Forms.

The dysenteric form of disease as varied in degree of force, is also varied in mode, viz. from simple and slight diarrhea to complicated dysentery. Diarrhea, or simple purging is by no means uncommon in the West-Indies as a mode of action of a febrile cause; and, as such, it often continues for a length of time without materially affecting the health, or diminishing the strength of the subject. Where diarrhea obtains, whether individually or among a body of troops, the severer forms of fever are rarely observed; hence diarrhea is considered, particularly among persons recently arrived in the West-Indies, as preservative of health; at least as affording, during its continuance, a kind of secu-

CHAP. I.

rity against the attack of more violent forms of febrile disease. The dysenteric disease differs, as now stated in force and mode of action; it is also, as will be afterwards explained primary, and original, or secondary and consecutive, that is, a relapsed form of ill-cured fever, whether endemic or infectious.

Simple or Compound.

The intestinal form of febrile action occurs under different temperaments, viz, sanguine, phlegmatic or serous. The symptoms are of different degrees of force and of different character, viz. simple or compound, according to the nature of the part or series of parts on which the action is principally manifested,—one coat, or all the coats; the intestine simply, or as connected with other abdominal organs.

Mucus or Simple Form.

1. The milder and simpler form of dysentery, the action of which is manifested principally on the mucous membrane, often begins by purging and griping. The stools are feculent—but liquid, sometimes slimy, rarely bloody; the nights are tranquil at one time, the days at another—and the whole number of motions do not perhaps exceed six or eight in twenty-four hours. The appetite is sometimes impaired, sometimes not materially; the thirst is generally greater than natural; the tongue is sometimes foul, sometimes not much changed from its ordinary appearance. This is the simpler and slighter degree; in another, somewhat differently modified, irksome sensations in the lower bowels, accompanied with more or less of pain and desire

CHAP. I.

for the night chair, gives the first indication. The stools are small, ineffective, slimy—often pure slime without feculence; sometimes slime mixed with feculence, and, on some occasions, with blood. Thirst is increased; appetite impaired; the skin soft; the heat moderate; the pulse nearly natural. The symptoms increase; and, from the beginnings here given, the indisposition gradually assumes the dysenteric form—with more or less of fever. But, though the disease begin in numerous instances as here described, it also often begins as a disease distinctly febrile from the first attack; which is sometimes sudden and violent, sometimes gradual and moderate, but still febrile. The commencement is marked with more or less of cold and shivering, at least with sensations of horror and creeping,—sometimes with sickness, vomiting and pain,—faintness, langour and depression of spirits. The desire for the night chair is urgent; tenesmus is sometimes intolerable, the evacuations small and ineffectual,—griping severe with irksome and unpleasant sensations about the rectum: sometimes the evacuations are copious, offensive, fetid, mucous and bloody; the blood sometimes pure and in streaks, sometimes dark and more equally mixed—the smell faint and sickly. Dysury is not uncommon, but it is only a contingent attendant. The tongue is ordinarily foul; sometimes it is moist, sometimes dry. The skin is hotter than natural; sometimes it is harsh and dry. There is no appetite for food; sometimes there is aversion to every

CHAP. I.

kind of sustenance. The pulse is febrile, but generally regular—not hard or contracted.

The description, now given, applies to the disease as it acts principally on the mucous membrane, and as it appears in the early stage, probably within the fifth or sixth day, at least before ulceration is formally established in the interior parts. After a continuance of seven or eight days, this form of action abates, even ceases—and health is gradually restored; or the acute stage is superseded by the supervention of changes in organic structure. These changes take place in the interior membrane: they advance progressively to disorganization, and terminate in ulcerations of the great intestines of more or less extent, and of different character—sometimes foul and fungous, sometimes corroded and putrid. When the local ulceration is established, the general febrile irritation subsides: the evacuations by stool become even less frequent; sometimes they are copious, sometimes scanty and mucous, sometimes mixed with blood, with purulence or other matters that belong to foul secreting surfaces. Tenesmus, which was distressing at the early period, is now moderate; appetite for food returns; thirst abates,—and the nights are often tranquil: there are often in fact fallacious appearances of recovery, but they are not of long duration. The flesh begins to waste; the skin becomes dry and harsh: the disease in short passes into the chronic state, where life is consumed through a slow process,—the course of the disease suspended and recurring at intervals, and sometimes

not terminated until after some years, the subject during all this time being invalid, valetudinary and miserable.

Complicated Form.

2. The more complicated form of dysenteric fever, where all the coats of the intestinal canal, and even where some of the contiguous parts partake of the morbid action, begins suddenly on most occasions. It usually begins with horror and shivering, head-ache, nausea, vomiting and retching more or less severe. Its commencement is sometimes marked by severe excruciating pains in the bowels; by spasms like those of *colica pictonum*—sometimes fixed, sometimes moveable like griping. The evacuations by stool are sometimes copious and watery; sometimes small, watery and ineffective; irregular or by starts—accompanied by a sense of stricture or want of power to effect what is desired. The irritability of the interior surface of the canal is generally great, sometimes so exquisite that the mildest liquid received into the stomach urges instantly to the night chair. Where that is the case, the evacuations are for the most part watery—sometimes copious, sometimes scanty. The simpler form of the disease often begins, as already stated, in the lower part of the canal: this appears most often to begin in the superior, descending by a certain rule of succession to the inferior; and, if it pass into the chronic state, it fixes itself chiefly in the colon and rectum. Pains, spasms, gripings and twistings are often distressing in the early stage—sometimes scarcely supportable. The abdomen is sometimes

CHAP. I.

superficially tender of the touch; and pressure, which bears upon, or moves the internal parts, occasioning considerable pain, gives cause to suspect the existence of inflammation in the peritoneal coat of the intestine. With this increased sensibility to pressure, the sensation of heat at the epigastrium is often preternaturally increased. The organ of urinary secretion is often implicated in the suffering,—the urinary discharge sometimes in a manner suppressed. The skin is dry and harsh in most instances; and, in very dry weather and under exposure to parching winds, it sometimes becomes withered and dry like parchment;—the progress to death is then rapid. The heat of the surface is ordinarily sharp and acrid,—disagreeable to the hand that touches the skin. The tongue is generally dry, often foul, sometimes clean with a blush of erysipelatous redness. Thirst is always increased beyond what is natural,—sometimes it is intense. The feeling is altogether uncomfortable,—irritability and despondence are prominent symptoms. The pulse is usually small and frequent, sometimes hard and tense, striking the finger as if the artery were wire or whip-chord; it is sometimes small, feeble and obscure. Instead of watery evacuations by stool—copious or scanty, there are sometimes copious discharges of blood—pure or mixed,—often pale pink coloured stools of an offensive smell.

The symptoms, now detailed, characterize the forming disease and are generally observable on the first or second day. They increase progres-

sively, and sometimes so rapidly that life is terminated within the eighth or tenth day, even earlier. Thirst is now generally urgent; the tongue is rough, often covered with a black pellicle—sometimes clean, red and glossy. Heat is high at the præcordia, diminished at the extremities. The eye is often glossy,—the white of a pearly whiteness. The pulse is ordinarily of great frequency, sometimes small and intermitting. Hickup is not unusual: the abdomen is often inflated—sometimes collapsed: dysury or suppression of urine is common. Tenesmus is often troublesome, but in general less urgent than in the simpler form. The evacuations by stool are watery: they are sometimes interspersed with dark coloured flakes so as to appear muddy; sometimes they resemble water in which butcher's meat has been washed. The intellect becomes disordered in most cases, for a short time before death; an event which happens in the more aggravated of the forms within the tenth day, in the less aggravated, whether naturally so, or rendered so by the interference of art, within the fourteenth. If the disease terminate favourably, it either terminates critically somewhat in the manner of a febrile disease, or it terminates by conversion upon parts of inferior vital importance, there establishing a mode of local action the duration of which is protracted and the cure of it uncertain.

CHAP. I.

DISSECTION.

The first, or simpler form of dysenteric fever, is rarely fatal during its acute or febrile stage. The second is a disease of great danger by its immediate act, and it terminates fatally at an early period, sometimes within ten days,—often within a fortnight or three weeks from its commencement.—The following appearances are usually observed in dissection of the dead body. The stomach shows, for the most part, a degree of vascularity beyond what is natural: its interior surface is sometimes besmeared with whitish matter, neither exactly pus nor mucus; the villous coat is often thickened—loose and spongy,—blue streaks, or livid patches are frequently observed underneath. The interior of the intestinal canal presents appearances similar to those observed in the stomach; and, where the disease has been of a protracted course, thickening of the interior coats, separation of the coats, ulceration and even gangrene are common appearances through the whole tract of the colon, and very often in the rectum. The peritoneal coat of the intestines is often much inflamed: adhesions are formed in many cases between the parts as they touch in their convolutions. Sometimes, instead of exudation and adhesion, the surface is dry and withered —of a dirty grey olive colour; or it is dry, black and gangrened. The omentum is sometimes dry and shrivelled resembling a dirty linen rag; some-

times it tends to gangrene, sometimes forms a new and fleshy looking substance which occasionally confines and compresses the intestine in such manner as to impede passage through the canal. The interior surface of the canal is sometimes red—erysipelatous; sometimes the inner coat is abraded —the cavity filled with bloody mucus, or dirty watery fluid.

CURE.

The cure of dysentery is a subject on which a great deal has been written, and on which writers manifest great diversity of opinion. I have not the means of forming an analysis of their opinions with a view to attain a general principle for the direction of practice; and, if I had the means, the limits of this sketch do not admit of detail. I shall therefore satisfy myself with stating my own view of treatment in the various stages and various forms of the malady, discriminating the circumstances of condition in so far as I am able to discriminate, and comprising what I have to say in as few words as I can comprise it.

1. In the form which acts principally on the mucous membrane, the principle which directs the method of cure is the same, whether the disease be mild or aggravated;—the measure in the quantity of means differs. The cure here, as in other cases of disease, consists in total subversion of the diseased condition with reproduction of a condition ana-

CHAP. I.

logous to that of health. With the view of effecting the purpose, it is recommended that the patient be immersed in a warm bath of moderate temperature; that, after friction of the skin with soap and brushes for purification and animation of the exterior surface, a vein be opened in the arm while the body is under immersion, and that blood be abstracted in quantity sufficient to diminish tension and remove interior congestion. It is not always necessary to abstract blood from the veins in this form of disease; but I think I may say that it is not only always safe, as done under the eye of a medical officer of discernment, but that it is generally useful in as much as the diminution of blood, by increasing the susceptibility of the system, contributes materially to render the operation of other remedies effectual. When the patient is removed from the bath, wiped dry with linen towels and afterwards rubbed dry with flannels heated at the fire, disposed in bed and properly covered with bed clothes, a pint or more of warm tea, with thirty or forty grains of prepared kali, is to be given immediately, followed, at an interval of fifteen or twenty minutes, by an emetic, viz. ipecacuanha alone, or with the addition of tartarized antimony. As soon as the operation of the emetic is finished, a purgative, viz. calomel gr. vi., jalap gr. xv., rhubarb gr. xx. is to be administered in bolus, and worked off by very thin chicken water, or rice water in which a few grains of kali are dissolved. If the patient be permitted to rise up to the night

chair, woollen stockings or socks, listing slippers, and a flannel night gown are indispensable provisions against the chances of injury from the impressions of cold floors, or sharp winds. Besides the means now recommended as constituting the basis of the cure, considerable benefit is obtained from applying a piece of flannel over the abdomen, adding such pressure to it by a flannel roller as gives support to the interior parts. If tenesmus be urgent, heat and pain about the fundament distressing, partial immersion in a tub of cold water, washing lavishingly with cold water, or bathing with spirits and water, camphorated mixture and white vitriol, or solution of sugar of lead give temporary relief,—if they be not of permanent benefit. These are useful; but powder of charcoal, viz. twenty grains given by the mouth, and one drachm, mixed with rice water or thin arrow root injected by clyster has, of all means known to me, the most instantaneous good effects in this form of disease, particularly where tenesmus, bloody and offensive evacuations are the prominent symptoms. The effect of the charcoal, as given by the mouth, is improved, and, I have reason to believe, rendered more permanent by the addition of ten grains of rhubarb and five of ipecacuanha. Where the subject has been prepared by previous evacuation, &c. two or three doses generally effect a cure; that is, the stools become feculent and figured; the gripings, pains, and tenesmus cease; and, if due attention be paid to diet and regimen, they rarely, if ever, return.

CHAP. I.

Where the disease has ceased, certain tonics, viz. infusion of colombo, Angustura bark, arnica, gentian, camomile, &c., camphorated mixture with white vitriol and alum—and acetated water of ammonia given at frequent intervals, may be reckoned among useful remedies: they contribute materially to accelerate recovery and to secure against the chances of relapse.

Complicated Form.

2. In the more compound form of the disease; that is, where all the coats of the intestinal canal are implicated in the diseased action, and particularly where a principal share of it is manifested on the outer or peritoneal coat, the first step towards a cure is necessarily directed to an adjustment of means which simplify the condition. Among these, immersion in a warm bath of moderate temperature is the first which presents itself. It is important from its own direct operation, but it is particularly important as preparatory of bleeding and auxiliary of its good effects. Bleeding is here the sovereign remedy,—and it is proper that the field be prepared for its effectual action. The blood, for instance, is to be abstracted while the body is immersed in the bath, the abstraction continued, whatever be the amount of the quantity, until a decided change be perceived in the circumstances of the case, viz. until gripings and spasms abate or cease, until strong pressure, even succussion can be endured without pain or painful sensation, and until the pulse, changing its condition, become open, free and expanded. The quantity required to produce

this effect is often high—three, or four pounds, or more; but, whatever it may be, we must not, if we expect a perfect and permanent cure, stop short of the point in view, viz. arrest and change of the existing condition.—Omental inflammation, or omental congestion accompanies dysenteric fever not unfrequently: the indications of its existence are obscure; and its foundations, where they do exist, are moved with difficulty—not without the most extreme measures.

When the condition of the disease has been changed by bathing and bleeding in the manner contemplated, the patient is to be removed from the bath, wiped dry, and, after he is perfectly dry, rubbed with warm olive oil, the entire of the abdomen covered with a blister, a flannel bandage applied over the blister, and James' powder given internally in repeated doses, with occasional additions of acetated water of ammonia, in the view of exciting and maintaining a regular and equal diaphoresis on the surface. If the pains and uneasinesses return after a lapse of ten or twelve hours; or, if the stools be still small, frequent and without feculence, the vein is to be re-opened, and whatever may be the apparent weakness of the patient, blood is to be allowed to flow until the end in view be perfectly attained. There is here no safety in half measures. Where the state is inflammation, and the termination suppuration, congestion or gangrene, we are not to hesitate, or to spend time in striking a balance between the chances of debility and the

CHAP. I.

almost certainty of death. Where the more direct and imminent danger has been removed by the means stated, the powder of charcoal, with a few grains of rhubarb and ipecacuanha repeated at intervals of five or six hours, maintains its power in rectifying the vitiated secretions of the interior surface;—it has no effect where the action of the disease is exerted upon the exterior membrane, or in the more remote of the abdominal organs.

If the surface of the alimentary canal,—and we form opinion on the case by the appearance of the tongue and fauces, be suspected of erythematous inflammation, besides abstraction of blood, warm bathing, &c. camphorated mixture, with a certain proportion of white vitriol given by wine glassfuls at short intervals, and given for the purpose of allaying the irritability of an inflamed surface, is often useful and materially conducive to the success of other means of cure. A dilute solution of sugar of lead is given with the same intention—and with the same good effect. It is not dangerous; on the contrary it is of great benefit. Thirty or forty grains of muriate of ammonia dissolved in four or five ounces of water, or repeated doses of acetated water of ammonia bear upon the same point as a local application,—they are moreover useful as moving and maintaining more or less of perspiration upon the surface.—Emetics and purgatives, though often prescribed, have no place in the present form of disease.—Milk and water, or rice water is the best drink.—Food of any kind, particularly solid food is

positively interdicted.—Warm fomentations of the extremities and abdomen by flannels wrung out of hot water, diaphoretics, viz. compound powder of ipecacuanha, small and repeated doses of James' powder, and preferably perhaps acetated water of ammonia, are among the principal of the internal remedies.

Remark.

The above are two prominent conditions of the dysenteric form of febrile action in its acute or recent stage. The dysentery of armies is generally considered as a perplexing disease; and it is in fact more fatal among the military in the West-Indies, either primarily or secondarily, than any other, the concentrated fever, as it occurs among strangers, excepted. But, fatal as it may have been, I think I am warranted to say from experience that if the condition of the case be discriminated, the principle of the treatment rightly understood, and the means of remedy applied at an early period with care and in justly measured quantity, the cure may be effected, not only in a short time, but with safety and with calculable certainty. On the contrary, if the disease be permitted to go on from day to day without interruption, the structure of the intestine undergoes changes of various kinds, viz. congestions and thickenings—more general or more local, ulcerations—sometimes simple, sometimes foul with spongy excrescences—the ulceration superficial or deep.—The seat of these ulcerations and excrescences is generally in the colon or rectum; but the history and cure of them come more properly to be considered under another head.

CHAP. I.

Late Stage.

If the acute stage of the compound form be far advanced before it is submitted to medical care, though abstraction of blood must still be considered as the remedy of chief dependence; at least as the remedy without which nothing can be done with a fair prospect of benefit, the abstraction cannot be carried to great extent at one time without compromising safety:—it may however be repeated with safety, and it ought to be repeated in moderate quantity at short intervals until all that is expected from it be attained. If the abdomen be tense and painful, the hypochondria inflated, the evacuations by stool watery—whether copious or scanty, the purging tincture of aloes and myrrh so often noticed in this sketch, with the addition of half an ounce or more of rectified oil of turpentine, presents itself as a suitable remedy, capable of giving relief and even of assuring something like permanent benefit. If the stools be offensive, mucous and bloody, the powder of charcoal, by the mouth or clyster, is almost sovereign; and if pains, spasms and gripings be urgent, cob-web is more powerful than opium—and it is less unpleasant by its effects.

CASE I.

Martinique, October 2nd, 1814.—M. Conroy, 63rd regiment, aged 25, attacked on the 30th of September and admitted into hospital to-day, complaining severely of pain, chiefly in the umbilical region, with frequent, slimy and bloody evacuations by stool—and distressing tenesmus; appetite much impaired; skin warm; tongue white; pulse about 80 strokes in a minute.

Bled to thirty ounces: R. sulph. magn. an ounce and a quarter. Evening,—griping continues with tenesmus: bled to twenty ounces: R. sulph. mag. six drachms. October 3rd,—griping continues; bowels freely opened in the night; skin warm; pulse frequent; tongue white. Bled to twenty ounces: abdomen fomented: castor oil—an ounce. Evening,—fomentations repeated. October 4th,—griping entirely gone; stools still slimy—not bloody; tenesmus less urgent. October 5th,—good rest; four evacuations without pain or tenesmus; skin moist; tongue clean; pulse soft. Pulv. ipecacuanha C. gr. viii. three times a day. October 6th,—one natural stool in the night: pulv. ipecac. C. continued. October 7th,—three natural evacuations since yesterday; appetite improving: medicines continued. October 8th,—appetite returned. October 9th,—convalescent.

CASE II.

Martinique, July 5th, 1814.—Corporal Schutz, 3rd batallion 60th, aged 40, full habit, admitted into hospital to-day, had been ill four days, the stools at first frequent, mucous and bloody. Bled to twenty ounces: blister to the abdomen: calomel gr. vi., opium gr. i. Stools like bloody water; pulse, at the time of admission, 80 strokes in the minute—now 100; nausea; dysury; tenesmus urgent; tongue foul; skin moist and cool; blood drawn from the vein covered with a strong buffy coat. July 6th,—symptoms rather increase,—the pains somewhat relieved after a second bleeding: calomel gr. iii., opium gr. ½, every fourth hour: effervescing draughts: emollient clyster: tepid bath. July 7th,—mouth affected by mercury. Pulv. rhei. scrup. i.: enema emolliens: balneum tepidum: anodyne draught in the evening. July 8th,—castor oil: anodyne injection: pulv. rhei. gr. v., pulv. ipecacuan. comp. gr. x. three times a day: warm bath:—no relief: tenesmus urgent; purging continues. July 9th, 10th, 11th,—medicines continued; no relief. July 12th,—died. *Dissection of the body.*—Liver much enlarged—preternaturally red; duodenum inflamed; cæcum and

CHAP. I.

colon strongly adhering to contiguous parts,—the colon to itself at its different turnings; the omentum—a red fleshy-like mass, in some parts twisted round the colon—containing purulent matter in several places: the lungs on the right side formed strong adhesions to the pleura costalis.

CASE III.

Martinique, October 16th, 1814.—Louis Vandreuil, 3rd battalion 6th, full habit, attacked with symptoms of dysenteric fever on the 12th, and admitted into hospital to-day. The stools were frequent, slimy, bloody; the *tormina* and gripings severe; the tongue foul; the pulse 80 strokes in the minute—full; the blood drawn from the vein covered with a buffy crust in cup form. Bled to the extent of twenty ounces: solution of salts with emetic tartar: calomel gr. vi., opium gr i. at bed time. October 17th,—castor oil, viz. an ounce in the morning: calomel gr. vi., opium gr. i. at bed time: the calomel and opium given every night at bed time until the 20th, when the gums were affected. October 23rd,—the pain returned; the pulse frequent, full and strong. Bled to the extent of eighteen ounces: blister to the abdomen. October 24th,—blood buffy—the surface in cup form; the pain still severe: bleeding repeated: castor oil in the morning: compound powder of ipecacuanha at bed time. October 25th,—an emetic; when the operation was finished, a diaphoretic draught, viz. tincture of opium and antimonial wine. In the subsequent days, castor oil occasionally; compound powder of ipecacuanha with some grains of rhubarb in a cup of infusion of quassia three times a day. October 28th,—died in the evening. *Dissection.*—The intestines generally of an inflamed appearance; the liver considerably enlarged in size.

CASE IV.

September 29th, 1814.—K——n, R. Artillery, attacked with severe pain and griping in the bowels, vomiting and pur-

ging—the stools mucus with blood. Bled to the extent of three pounds,—relieved from pain; the purging continues with a good deal of tenesmus: castor oil: calomel and opium. September 30th,—pain relieved; purging continues with tenesmus: calomel and opium every fourth hour. Noon,—purging incessant—every ten minutes; evacuations—blood and mucus; tenesmus distressing: twenty grains of powder of charcoal by the mouth; one drachm in two gills of rice water by clyster. October 1st,—no return of pain or tenesmus; purging diminished: the powder of charcoal repeated both by the mouth and clyster. October 3rd,—discharged in perfect health.

CASE V.

May 25th, 1815.—A Man of the R. Artillery admitted into hospital to-day, complaining of purging—not violent and without pain. May 26th,—seized in the night with violent pain and spasm in the tract of the colon and about the stomach: bled and bathed,—not much relieved: bled again largely—the precise quantity not stated: bathed,—somewhat easier; desponds; the pulse very frequent and small; the countenance pale; the lips pale; the tongue rough; the skin damp —not warm—and not animated. Evening,—not worse; drank some porter,—refreshed; skin more warm and animated. May 27th,—bad night; little or no sleep; pulse small and frequent; uneasiness in the bowels,—desire for the night chair; stools small and watery,—and give no relief; the tongue rough, foul and brown; skin damp—not animated:—rubbed with warm oil and mercurial ointment;—a sense of fulness in the bowels; no tension; flatulence troublesome: purging tincture of myrrh and aloes with æther. Evening,—not worse; an effective evacuation by stool,—easier, but so weak that he can scarcely turn himself, or bear to be turned in bed; the pulse slower, stronger and more expanded. May 28th,—slept in the night; pulse rather more distinct; tongue moist and clean; eye clear; countenance more animated; distressed with flatulence and distension. May 29th,—no sleep; abdomen distended—uneasy—distressed; no

CHAP. I.

effective evacuation by stool,—the stools watery and small; tongue rough and brown; no vomiting; urinary discharge suppressed: injection not admitted. Evening,—died in the course of the day. *Opened.*—The omentum thickened,—resembling a fleshy swathe embracing and girding the whole of the intestines, adhering firmly to the colon and descending into the *pelvis* and attaching itself to the *rectum*. The colon was diseased through its whole extent,—gangrened in many parts,—ulcerated internally in some,—the interior coats putrid;—the mesocolon in a similar state with the omentum.

The above was a case of great violence, and the means employed in cure were only of moderate force. Bleeding to the most extreme measure at once, and repeated at short intervals, warm bathing long continued, and blisters to the whole of the abdomen, with James' powder, nitre, camphire and acetated water of ammonia in quantity might, perhaps, have done something; what was done did nothing.

Chronic State.

3. The simpler form of dysenteric action as manifested in the function of the mucous membrane, though an acute disease, is not one of those diseases which proves rapidly fatal, or that often terminates fatally in the primary stage. It ordinarily abates or ceases within a fortnight or three weeks from the commencement, either through the aids of art, or of its own accord. But, though it cease as here stated, it very often soon returns, either by obvious transgression of the rules prescribed for diet and regimen, or by the operation of secret periodic influence that we do not understand, and that we cannot perfectly controul. The disease thus ceasing and recurring at intervals, sometimes for several successive months; and some change, general or partial, being made in the structure of the intestinal canal during every recurrence whereby the intestine is rendered

less fit for the performance of its office, a new condition of things arises commonly termed chronic dysentery. As the changes effected on structure are various in their form and nature, so the symptoms which indicate the existence of these changes furnish a considerably diversified picture of disease. Among other things; the fat is absorbed from the cellular membrane; the flesh wastes; the pulse is ordinarily more frequent than natural, generally small, confined, somewhat hard—unexpansive; the tongue is sometimes rough and foul, dry or moist; sometimes it is clean, red, smooth, glossy—and shining as if covered with a coat of varnish; sometimes it is preternaturally red in its substance, but superficially rough and besmeared with a black pigment or adventitious pellicle,—sometimes moist—often dry. The evacuations by stool are various, sometimes watery and copious; sometimes watery and small; sometimes rendered with pain and griping,—sometimes without pain. They sometimes, while numerous and rather copious, resemble dirty water—with dark coloured flakes interspersed but with scarcely any appearance of real feculence. This is more usually observed in very late stages, where inflammatory action supervenes in subjects that are exhausted and cachectic. In other cases, the evacuations are mucous and bloody, more or less plentiful; sometimes they are mixed with purulence, sometimes with sanies or offensive ichor, and sometimes they are smooth, greasy—more or less lienteric. The number of stools in a given time is rarely high

CHAP. I.

—sometimes not more than three or four in twenty-four hours,—rarely more than seven or eight. Sensations of irksomeness are felt throughout all parts of the alimentary canal, but particularly in the tract of the colon and rectum. Tenesmus is rarely urgent as in the recent form of the disease; but there is often uneasiness about the fundament, and more or less of trouble and difficulty in the urinary secretion. The body wastes daily, the skin becomes parched and inelastic—without activity of life and circulation; the degree of heat is at the same time often higher than natural.

Complicated Form.

The complicated form of acute dysentery is more rapidly fatal than the form now described; but, when apparently cured, it is less liable to recur;—*hence* it furnishes comparatively few examples of the chronic state. Where the course is protracted, congestion, or abscess in the intestine itself or other part nearly connected with it, is usually observed in dissection of the dead body.—It is difficult to ascertain the precise condition in the living subject, or to form a distinct prognostic of the issue:—the best cures are only imperfect.

Secondary Form.

Besides dysentery, originally and purely intestinal, the gastric remittent, and even the intermittent often assume the dysenteric form of action in relapse; and by this contingence, the dysenteric column, in the returns of military hospitals, is apparently augmented beyond the real fact. The dysenteric disease arising from this source, viz. action transferred, generally observes periodic movement, especially in its

early periods. The stools are then often copious and watery, sometimes bilious, acrid and corrupted—in correspondence with the other vitiated excretions of the organs of the abdominal cavity.

DISSECTION.

Where the dysenteric form of disease proves fatal in what is termed the chronic state, the causes of death present themselves in various forms of changed structure, either in the coats of the intestinal canal itself, or in the structure of the parts which are nearly connected with it. In the first place, an erythematous redness is often conspicuous in the interior surface through the whole extent of the canal, more remarkable in some places than in others but without perceivable ulceration. In others, the interior surface is spongy and loose, inflamed in various places, and deeply ulcerated in some; and, in such case, the cavity of the intestine is more or less filled with ill-conditioned purulence or offensive bloody mucus. In some, the coats of the intestines, particularly of the lower intestines, are thickened and changed in structure, contracted at some places, dilated at others, sometimes converted generally or partially into a leather-like tube without vascularity; and sometimes adhesions are formed among the contiguous parts, constituting masses of congestion which nearly obliterate the traces of the natural structure. The interior surface is moreover sometimes bespangled with spongy, foul ulceration

CHAP. I.

of various size and condition—sometimes deep and corroded, sometimes foul and protuberant like mulberry. The mesentery often presents a mass of unnatural congestion; the veins distended with black blood; the glands red—large as peas, sometimes as kidney-beans, even as pigeon eggs—filled with cheese-like matter. The omentum is often of a dirty red colour; sometimes it is in a manner obliterated as if absorbed under the long continuance of the disease. The liver, spleen and pancreas, particularly in such dysenteric forms as supervene upon fever, gastric or intermittent, are rarely sound. The liver is then almost always of changed structure —generally obstructed and of increased size.

CURE.

The cure of dysentery, where the disease has degenerated into chronic form depending upon changed structure in the coats of the intestinal canal and parts connected with it, implies a complicated process of difficult execution and ordinarily of a result little satisfactory. The means which have been employed in remedy by different practitioners are numberless; but I shall confine myself to those, to the effects of which I can bear testimony from my own experience.

Erysipelatous.

1. In that form of the disease where the tongue is red, dry, smooth and glossy, or shining; camphorated mixture, with a few grains of white vitriol given four or five times during the day, and

alternated with acetated water of ammonia in large doses, appears in reasoning on the nature of things to promise benefit, and I think I am warranted to say that it does not fail in experience where administered carefully and with a proper attention to successions. Solution of sugar of lead, viz. ten grains of sugar of lead, with one drachm of chrystals of tartar dissolved in two pints of boiling water, given every three or four hours to the quantity of two ounces for a dose, gives evident relief on many occasions; and in no instance, within my knowledge, has any inconvenience arisen from the supposed deleterious effects of lead.—But these remedies, though beneficial, are only partial; the radical means of cure must act upon the whole of the system. Of general remedies, immersion in a warm bath of moderate temperature is one of the first, and one of the most important. The virtues of the bath are improved by the addition of aromatic herbs, or *eau de Cologne;* and the effect of its operation is confirmed by continuing the immersion for one hour at least. After the bath, friction of the body with warm olive oil; and, after friction, covering the abdomen with a piece of flannel and swathing it by a flannel bandage, are means of some value; particularly as assisted by small doses of James' powder, flowers of sulphur and tincture of opium, morning and evening. Milk, custard, *blanc manger*, jelly of rice, or arrow root form the principal part of the diet—animal food and rich diet are peremptorily interdicted.

CHAP. I.

Ulcerative.

2. In another form of the disease, viz. where the appearance of the stools give reason to believe that there are numerous superficial ulcerations in the interior surface of the lower intestines, but without such congestion in the coats as constitute permanent change of structure; powder of charcoal, given by the mouth alone or with the addition of rhubarb and ipecacuanha, and given by clyster in rice or barley water, is often a remedy of important value. Purging tincture of aloes and myrrh is one of ths best forms of purgative. Burnt alum, viz. fifteen grains, with a like quantity of gum arabic, made into a bolus and given at intervals of five or six hours, has also, in my own experience, often operated favourable changes in this condition of disease. If there be grounds to believe that there are ulcerations in the rectum and in the lower part of the colon, the tincture of aloes and myrrh, a solution of blue vitriol, even a solution of corrosive sublimate in lime water may be, and has been in fact injected with advantage. The warm bath is to be employed with the same general view as in the former case: partial ablution, or partial immersion in cold water is occasionally of benefit; also frictions and flannel bandages,—diet of a low scale, and of the same quality as in the preceding.

Congestive.

3. In other cases, viz. where there is reason to think that the structure of the coats of the intestine is changed—the coats thickened, the interior surface broken by foul and spongy ulcerations, the mesenteric system loaded with congestions, the line

of proceeding is perplexed, the indications of cure complicated and frequently ambiguous. In such case I should not hesitate, however much the patient may be reduced in flesh, to direct the abstraction of blood in small quantity, viz. twelve or fourteen ounces, followed by immersion in a warm bath of moderate temperature for the space of one hour or more immediately after the bleeding, frictions with warm olive oil, flannel bandages so applied as to bear on the abdominal section of the trunk with a certain degree of pressure. These, with suitable preparations of mercury, singly or combined with opium and James' powder, constitute the principal means of cure. The baths and frictions are to be repeated daily, the bleeding occasionally—once a week or oftener; the mercury to be given in small doses, with opium and James' powder, or a few grains of flowers of sulphur until the salivary glands be in a slight degree affected. The diet in this case is to consist of milk, whey, rice or barley water, the expressed juice of alkalescent or deobstruent herbs, viz. dandelion, trefoil, succory, endive, scurvy grass, &c. Gross animal food is entirely interdicted; the lighter of the farinaceous admitted—and that only in small quantity. When the foundations of the congestion have been moved by a persevering continuance in the means prescribed, the arsenical solution, myrrh, steel and soda, alternated with other things that are suitable to the circumstances at the time, aid materially in forwarding the object in view, and further serve to

CHAP. I

confirm the advantages that have been gained by a succession of expedients. If there be evidence of the existence of foul ulceration, spongy and diseased surfaces in the lower part of the canal, injection of soap and water—warm and in large quantity for the purpose of washing of foulnesses, followed by injections in small quantity—not exceeding two or three ounces of solution of white vitriol and alum, blue vitriol, corrosive sublimate, &c. afford relief in many cases, and even contribute materially in some to effect a permanent cure. A dilute solution of the nitrate of silver might be employed for the same purpose with a reasonable prospect of advantage, but I have not the satisfaction to say that I have seen it so employed. Where there is much heat, pain and active inflammation, solution of sugar of lead is perhaps the most suitable for injection. Where the ulcerated surfaces are healed, or in a healing state, the foundations of congestion shaken or removed, and where purging is continued from relaxation or preternatural irritability, a variety of tonics and astringents have been employed by practitioners for its repression; and, if employed with discrimination of circumstances, they are often employed with benefit. Of these gum kino, catechu and sima-rouba have appeared, in so far as my experience goes, to be the most useful. They are valuable in their places; but it is to be remembered that the effect of all substances of this class, which is often considerable for a few days, is soon lost; hence it becomes necessary, in order to

maintain the ground that may have been gained by the first impression, to vary the form of tonic at short intervals, so as to keep the function of the alimentary canal in artificial activity in hopes it may in time resume its healthy habit. It is to this condition of disease that the arsenical solution particularly applies,—and it is here a remedy of the greatest value.

The progress of the dysenteric form of disease is, or may be suspended temporarily and perhaps cured permanently, even at a late stage, by a well adjusted perseverance in the measures here recommended. But, in order to assure this success, rules of diet and regimen must be well considered and rigidly observed, at the same time that the air and climate, if dysentery be endemic in the district where the subject resides, must be changed, either by a cruise at sea, or by removal to a cantonment on shore where the disease is little known. Change of air and climate presents itself in theory as a point of great importance to the success of effect; and I am enabled to speak from experience with confidence of its value in practice. Dysenteric convalescents were sent from the hospitals at Barbados to cruise at sea wherever opportunity offered between the years 1812 and 1815; and, though they were never sent with those comforts and equipments which the condition of invalid men required, yet a great majority of them returned with improved, and some of them with re-established health. The cruise at sea, both from reasoning on the subject

Change of Air.

CHAP. I.

and from experience, furnishes the most desirable change; but, in defect of suitable accommodation on board of ship, benefit may be obtained by removal to a situation on shore of different qualities from that where the disease originated. The small town of La Trinitè on the north side of the island of Martinique, according to the report of its inhabitants, is in a manner exempted from diseases of dysenteric form. As the report implied information which, if founded in truth, might be important to the interests of the British army, it was investigated with care in the year 1812; and, the fact being ascertained by credible testimony to be such as stated by the inhabitants, a proposition was submitted to the Commander of the Forces, requesting that an experiment might be made, with some of the dysenteric patients who were then in the hospitals at Barbados, for the purpose of ascertaining the precise state of the case. The Commander of the Forces acquiesced in the proposition; and, in consequence of such acquiescence, fourteen persons were selected as subjects for experiment. The persons selected, it is proper to observe, did not rank among those absolutely condemned as hopeless. One only was thought to be in immediate danger; but they had all been liable to relapse after relapse for a length of time, and few, if any of them, gave promise of recovery if they were allowed to remain where they were, even with all the assistances that Barbados hospital could afford to them. They were accordingly embarked, sent to La Trinitè,

placed under careful medical superintendence; and they were all except one, restored to efficient health in the course of three months,—in fact so far restored that they reassumed their military duties when they returned to the garrison at Barbados, and executed them in all their forms without inconvenience. The example here adduced was so decisive, in proof of the benefits of the air of La Trinitè, that a house was hired and fitted up as a depot hospital for dysenteric convalescents from the different islands in the command; but the depot was scarcely established when the hurricane, which occurred in the month of June 1813, deranged the accommodations, diminishing the comforts, or operating such changes on the conditions of the atmosphere that the subsequent good effects, though still considerable, were much less decisive than they appeared to have been in the first trial.

The cure of the chronic form of dysentery is, as already observed, a difficult undertaking; and, according to the usual mode of proceeding in military hospitals, almost a hopeless one. Without possessing the means of assuring changes of air and climate as occasions may require, and of instituting and giving effect to plans of diet and regimen that are suitable in all points, the medical officer cannot expect to do much by all the other aids of his art. The arrangement of diet is essential to the success of cure; but it does not appear to be well understood in principle; and every day's experience brings proof of error in practice. The dysenteric subject is

CHAP. I.

for the most part reduced in flesh and exhausted in strength; and he, for the most part, concludes in his own mind that these can only be recruited by nourishing diet and certain allowances of wine or other strong liquor. The medical officer often subscribes to the opinion, either through want of firmness to resist, or want of mind to estimate justly the true causes of things. He thus prescribes diet—termed generous, with large allowance of wine and other comforts where the intestinal canal is ulcerated, its coats thickened, the mesenteric system obstructed and other of the abdominal organs contingently diseased. If we look at the dead bodies of the dysenteric, we would not, if we allow ourselves to reason on what we see, expect any thing to be less suitable for the ulcerated and inflamed intestine, the obstructed and inflamed mesentery than rich and full diet and strong wines; yet such, through prejudice and precedent, appear very generally in the diet tables of the dysenteric in British military hospitals. The injuries of such proceeding are not unimportant. It is dangerous to attempt to reform medical error by mandate; but it is to be hoped that the evidences of the dissections which medical officers are enjoined to make of those who die under their care will in time induce them to consider the subject scientifically and on its own grounds; for it is scarcely possible, if they do so, that a practice, which is incongruous in reason and which can bring no support from experience of its good effect, will long continue to prevail.—The limits of this sketch

do not admit of detail, and I content myself with suggesting a general view on the subject of cure. The outline here given appears to be reasonable—and I should hope that it would be effectual if it were correctly administered. I must however add that it has never been completely executed under my own eye, the immediate treatment of sick, (and in this case the physician's own eye must descend to the minutest attentions,) not being consistent with my official situation in the army, or, where it was so, the means that would have given success to my views not being within my command at the time.

CASE I.

Martinique, October 11th, 1813.—Johnson, 63rd regiment, aged 25, has been seven years in a tropical climate, admitted into the hospital at St. Pierre to-day, but had been in hospital at another station for the space of six weeks under a disease of dysenteric form. The stools at the time of admission were feculent and less frequent than they had been; the pulse was 98—weak; the tongue red and shining; debility great,—emaciation extreme. Calomel gr. ii., ipecacuan. gr. ii., opi. gr. i.—*ex infuso Quassiæ ter in die.* November 5th,—pulv. ipecacuan. comp. gr. x.: p. rhei. gr. v.—*ex infuso Quassiæ ter in die.* November 16th,—solut. vitriol: semunc. ter in die: small doses of mild purgatives—anodynes occasionally. The number of the stools decreased gradually—and they were at last reduced to three in twenty-four hours; the pulse still frequent and weak; the tongue very red and shining with no amendment in the appearance; no increase of strength; flatus and distention sometimes distressing. December 7th,—four stools—scanty, dark coloured; much flatulence; pulse 90; tongue red and shining. December 8th,—stools frequent and

CHAP. I.

bloody—with griping pain; tongue red,—foul on some parts; pulse weak,—100 strokes in the minute: emetic; after the operation of the emetic, effervescing draughts with two drachms of tincture of colombo every third hour. December 25th,—stools frequent; pulse 114, and weak; tongue red: calomel gr. iii., opii. gr. ½, every fourth hour; effervescing draughts occasionally. December 29th,—four stools in twenty-four hours: the appearance less unnatural: the mouth slightly affected by mercury: pulv. ipec. c. gr. x., rhei. gr. v. ter in die: calomel gr. ii., opii. gr. i. at bed-time.—This was omitted after a few days, and the other means were varied according to urgency of symptoms. He continued upon the whole easy, with occasional gripings and liquid stools,—sometimes with nausea and even bilious vomiting. He gradually lost strength and flesh, and died on the 27th of February 1814. *Dissection*,—Liver enlarged; its substance of a pale diseased appearance; the blood vessels of a florid red—numerous on the surface and in some parts of the interior substance, particularly in the left lobe; the gall bladder full of dark coloured bile; spleen small in size; small intestines overflowing with bilious matter—preternaturally red both externally and internally,—some parts of a darker colour as tending to gangrene.

CASE II.

Martinique, November 16th, 1813.—John Ditchborne, R. W. I. Rangers, aged 30, admitted into hospital to-day, complaining of purging, the stools slimy, bloody and frequent—with griping and tenesmus; the tongue furred; the appetite impaired; the skin dry; the pulse quick.—Bled largely—and purged with sulphate of magnesia, and afterwards with castor oil. The warm bath was ordered; fomentations were applied to the extremities; blisters to the abdomen; nauseating doses of tartarized antimony were given occasionally,—likewise ipecacuanha and now and then a laxative. This plan of treatment not succeeding, small doses of calomel with opium were substituted in its place; but with no better success: the tenesmus was very

urgent; clysters with laudanum gave very little relief: the nights were sleepless; emaciation extreme: he lost ground daily, and died on the 15th of February, 1814. *Dissection of the body.*—The left lung appeared diseased; tubercles in various places; the liver was of an unnatural pale colour; the spleen of a large size; the intestines adhered externally at various points to each other; the mesentery was much inflamed throughout.

CASE III.

Martinique, November 19th, 1813.—Charles Godfrey, aged 22, of a spare habit, attacked with symptoms of dysentery on the 18th of November and admitted into hospital to-day. The stools frequent—with griping pains; the skin dry and scaly; the abdomen inflated and tense. Sulphate of magnesia, followed by repeated doses of compound powder of ipecacuanha:—he appeared to be relieved. November 27th,—the symptoms recurred: calomel gr. ii., opium gr. ¼, three times a day. December 6th,—the calomel and opium were continued—and the mouth was slightly affected. The swelling or tension of the abdomen subsided; the dysenteric symptoms increased; the flesh wasted; and death closed the scene on the 27th of December. *Dissection of the body.*—The liver much enlarged and hardened; the coats of the stomach much thickened; the stomach itself contracted, but containing a quantity of viscid, tenacious matter of a dark, dirty, grumous appearance; the duodenum also much thickened; the villous coat a good deal inflamed, and matter of the same nature as that observed on the inside of the stomach adhering to it closely. The great arch of the colon was greatly distended, its inner surface very vascular, superficial ulceration, or rather abrasion of the villous coat. The whole of the intestinal tube was thickened, and of an unusual brawn-like hardness—resisting pressure: the lower part of the canal contained a slimy and bilious matter in considerable quantity, but no hardened fœces. The spleen was somewhat increased in size, but had nothing in its appearance deserving notice. A small quantity of water—not more

CHAP. I.

than three pints or a quart, floated on the surface of the intestines.

CASE IV.

Barbados, November 9th, 1814.—Withers, R. Artillery, suffered from disease in dysenteric form for these last six months. The disease, being of the milder kind at the commencement, was not treated in the prompt and decided manner that was customary in the hospital of the Artillery corps. Withers did not appear to have been bled, at least bled to any extent: the cure was trusted to calomel and opium, with occasional purgatives and compound powder of ipecacuanha. The disease continued notwithstanding to advance; the flesh wasted; and four months ago there seemed to be no hopes of recovery. The arsenical solution was prescribed for him: he took five or six drops of it twice a day for some time; warm baths at least three times a week; the diet chiefly consisted of arrow root and milk, rice or custard. The progress of the disease was arrested; the number of the stools diminished to two, or at most three in twenty-four hours; the sleep was sound; the appetite good; flesh was reproduced; and strength was regained to a certain point, but recovery stopped short of perfect health. He walked out in the mornings and evenings; and, though he was still invalid, there were hopes that he might have remained valetudinary until an opportunity offered of giving him the chances of recovering health by a change of climate. This did not soon occur: he ceased to make progress, began to retrograde, lost strength so that he could not take exercise, and, for three weeks before he died, he could not rise from bed being emaciated to the last degree of emaciation. He died on the 9th of November. *Opened.*—The mesenteric system was exceedingly diseased,—the glands obstructed; the omentum was very vascular, and had the appearance of having been materially affected in the early part of the disease; the small intestines were livid generally as if circulation had been very languid for a length of time:—the whole of the organs in the abdominal cavity gave evident indications of constitutional derangement.

CASE V.

May 30th, 1813.—C——n, R. Y. Rangers,—long ill of disease in dysenteric form, complicated with disease of the lungs; the whole having degenerated into a constitutional cachexy, he died this evening and was *opened*. The colon contracted in some places, dilated in others—diseased through all its extent;—several excrescences protruded outwards from the interior; the mesenteric glands inflamed and enlarged; the lungs adhered to the pleura, their substance black and spongy like a fungus:—no open abscess.

D. *Dysenteric Fever—Retrograde or Liquescent.*

To the above short and imperfect view of the dysenteric form of fever, considered as a disease in progression to the formation of new products, I shall now add a remark on forms which may be properly termed retrograde or liquescent. The retrograde form sometimes occurs as original, arising from the operation of unknown epidemic causes under certain malignant constitutions of season; it frequently occurs in relapse under the operation of known artificial causes which corrupt, or in other manner deprive the air of the principle which is necessary to the support of life. The disease sometimes occurs in the West-Indies epidemically; but I have myself seen it only sporadically and contingently in that country. It begins, where it does occur, as dysenteric fevers usually begin, viz. with more or less of chilliness. The invasion is often sudden, the course rapidly fatal. The stools are sometimes

History.

CHAP. I.

watery and thin, generally bloody, dark and fetid,—sometimes blood unmixed—dark and grumous; sometimes pale and dirty, like water in which half putrid meat has been washed; sometimes they are copious and fetid—slimy and bloody; sometimes copious and colliquative—without much appearance of blood.

The above symptoms are observed in the primary or original form; they are very common in the secondary or relapse, under a corrupted atmosphere generally or locally, whether the original fever may have been endemic, epidemic or personally infectious. In the different forms of this disease, from whatever cause originating, the skin is oftener preternaturally cold than preternaturally hot; the skin and countenance are often dark and cloudy as in sea scurvy, the eye is clear, pearly white, or glossy—the expression vacant or desponding; the tongue is sometimes smooth, red, large, or swollen, sometimes livid or leaden coloured—generally moist, and sometimes preternaturally flaccid; the pulse is irregular—depressed, but in other respects little changed, sometimes small, frequent and obscure; often weak and always inelastic.

DISSECTION.

The appearances which present themselves on the dissection of the dead body, whether the disease be primary, or secondary as a form of relapse from general fever, are ordinarily much alike. Black grumous blood is often effused into the intestinal cavity,

most commonly into the cavity of the small intestines so as to give to the intestine the appearance of black pudding;—the coats of the intestine in such case are rarely diseased. Instead of the black grumous blood alluded to, there is sometimes fetid fluid, resembling water in which putrid butcher's meat has been washed, sometimes bloody mucus,—and, in this last case, the interior coats are spongy, loose and separated—even ulcerated; sometimes the peritoneal coat is black and gangrenous throughout, particularly in cases of relapse from general fever under an impure state of atmosphere—a condition more resembling stagnation as a first effect than as a consequence of preceding excited action. The liver and spleen are often distended with black blood, so as to resemble a putrid mass of gore.

CURE.

The dangers of this form of disease are great, whether the disease be primary or secondary, that is, relapse in dysenteric form from preceding general fever. Immersion in a warm bath of rather a high temperature presents itself first among the remedies. The virtues of the bath, as intended by its heat to stimulate the surface and to equalize the circulation of the blood, will be materially augmented by the addition of ammonia, or *eau de Cologne*. Where the surface has been warmed and the circulation somewhat excited by the influence of the bath, abstraction of blood from a vein in the arm while the

CHAP. I.

body is under immersion, whatever abhorrence there may be to the practice, has appeared to myself to be a measure of importance, not as curing the disease directly, but as effecting changes in the distribution of the blood and perhaps on its constitution, which facilitate and render effectual the action of other remedies that are prescribed with a view to direct cure. The blood is to be abstracted, as now observed, while the body is under immersion; and, while the stream flows, a warm and stimulating cordial, viz. wine, æther or warm brandy and water is to be given internally in such quantity as circumstances may indicate to be safe and proper. The quantity of blood to be abstracted on this occasion cannot be defined by prescription. It can only be safely and usefully determined by circumstances as they arise under the act of abstraction. It ought to be judged in all cases under the eye of the physician himself; for, we may say with truth that the life of the patient is compromised, if measure be defined by prescription, or if it be left to be regulated by the judgment of an ordinary operator. The purging tincture of myrrh and aloes, with or without oil of turpentine as the case may be, proves on most occasions the best form of purgative. Burnt alum to the quantity of fifteen grains, with an equal quantity of gum arabic made into a bolus and repeated at an interval of five or six hours, has sometimes been given with advantage under my own eye, particularly where the evacuations were copious, mucous and bloody. Frictions of the skin with

warm and stimulating oils, warm temperature of apartment, diffusible stimulants internally, &c. give promise of benefit; but I cannot from experience define the extent, not having opportunity, where a disease of the form in question occurred, of executing my views according to my wishes. Powder of charcoal alone, or with suitable additions given by the mouth or by clyster, presents itself on this occasion as a remedy of great promise; but I have not had direct experience of it, no case of this form of disease having occurred since I had knowledge of charcoal as a remedy for dysentery.

SECTION IV.

Hepatic Forms of Febrile Action.

The cause of endemic fever sometimes manifests its action prominently on the hepatic system in the West-Indies, as well as in other countries; but I have nothing of consequence to add to its history or cure beyond what is known to every one. The cause acts locally, and it manifests its action under different forms. I distinguish four that are prominent, sometimes more pure and simple, sometimes more mixed or complicated, viz. 1. a mode of action, more peculiar to the sanguine temperament, manifesting increased circulation in the sanguiferous system and terminating in suppuration according to a common rule of proceeding; 2. a form of congestion and accretion, more peculiar to the phleg-

CHAP. I

matic temperament, terminating in various forms of changed organic structure, usually termed obstruction; 3. a form of diseased secretion, chiefly manifested in the serous system; and 4. a form of slow or impeded circulation, more peculiar to the gangrenous temperament, terminating in stagnation or engorgement throughout the whole extent of the liver.

DISSECTION.

The appearances, observed in dissection of the dead body, vary according to the form and character which the morbid action had assumed in the progress of the disease. In the sanguine temperament, the vascular action is high, the natural tendency of the action suppurative; hence part, or the whole interior of the liver is converted into purulence; and, adhesions being formed between the external coats of the liver and contiguous parts, the substance is corroded and the matter finds issue, sometimes through the lungs, sometimes through the intestinal canal; and sometimes the tumour, adhesion being formed with the parietes of the abdominal cavity, presents itself externally, and so prominently as to admit of being opened by the knife. In the phlegmatic temperament, the vascular action is only obscurely increased; congestions, adhesions and accretions, which constitute new forms of structure of various kinds and degrees, are the obvious effect. The liver, in such case, is usually enlarged in size, the substance sometimes pale, sometimes brown like

the colour of brick—firm and in a manner friable; sometimes dry and rough like coarse freestone; sometimes dry or without moisture as if it had been boiled; the exterior is sometimes smooth, sometimes studded with knobs of peculiar structure. In the serous temperament, there is more or less of change in the organs of direct bilious secretion. In the gangrenous temperament, the substance of the liver is often enlarged—the interior distended with black blood more or less fluid; sometimes it is in a manner rotten—the coats ruptured by distention.

CURE.

1. The first form of the hepatic fever happens contingently in all countries; but it is more common in the West-Indies than in most countries in Europe. The means of cure are obvious, viz. abstraction of blood to great extent; blisters to the side; cooling laxatives and other means that moderate the general circulation and derive from the liver to the surface of the body, or the excretory surface of the alimentary canal.

2. The second form of the disease is not unfrequent in the West-Indies in particular districts, especially in those most liable to intermittent fevers. In regard to cure,—after abstraction of blood to such extent as increases the susceptibility of the system generally, mercury administered in small doses, given in such manner as to excite the action of the salivary glands and continued for a sufficient length

CHAP. I.

of time to effect and assure a permanent change in the diseased actions of the organ, is the remedy of principal dependence.

3. Mercury, after the condition has been prepared for its action, is the principal means of cure where the biliary secretion is principally in fault.

4. The third form occurs principally under the existence of the gangrenous constitution,—and not unfrequently under the predominance of malignant epidemics. The means of cure consist principally in abstracting blood from the veins while the body is under immersion in the warm bath; in gestation in the open air in wheel carriages after the foundations of the disease have been moved by bleeding and bathing; in purgatives of brisk operation that act extensively and stimulate the action of the hepatic system—with the addition of other means which move the tide of circulation towards the surface and which maintain it in force in the extremities.

CASE I.

July 10th, 1814.—Augustus Knopp, 3rd battalion 60th regiment, aged 27, florid complexion, scrophulous habit, attacked on the 9th of July and admitted to-day, complaining of pain of the right hypochondrium—much increased by pressure on the part; cough troublesome; respiration difficult; the pulse 82 strokes in the minute—and full; the tongue foul; the skin hot. Bled, at the time of admission, to the extent of twenty ounces: calomel gr. vi. July 11th,—bled again to the extent of twenty ounces: calomel repeated, followed by solution of purging salts and emetic tartar:—the solution operated freely: blister applied to the side: James' powder gr. x. July 12th,—

calomel gr. iii., opium gr. ½ every fourth hour. July 14th,—calomel gr. ii., opium gr. i. twice a day. July 16th,—the mouth affected by mercury: calomel omitted: nitric acid. July 17th,—convalescent. Recovered.

CASE II.

February 21st, 1814.—John Oliver, aged 44, of a full and robust habit, attacked on the 18th of February, and admitted into hospital to-day. He complains of fever, which commenced with rigor about 9 o'clock in the morning every day since the 18th. It subsides after a few hours by partial perspiration. The right hypochondrium is tense and painful to the touch, particularly to pressure; the pulse 100 strokes in a minute; the tongue foul; the skin moist, or damp; the body costive; the blood drawn from the vein covered with a buffy crust and turned up at the edges. Bled to the extent of thirty ounces:—pain relieved: calomel gr. vi. every four hours: blister to the side: solution of salts given at intervals until plentiful evacuations by stool be obtained. February 22nd,—the pain returned in the evening: bled to sixteen ounces: emollient clyster: fomentations to the side: calomel gr. vi., opium gr. i. at bed time. February 23rd,—calomel gr. iii., opium gr. ½ every fourth hour: another blister to the side:—exacerbation of fever commencing with rigor in the morning; anxiety; pain in the side distressing; skin cold; pulse very quick—weak. February 24th,—died in the night. *Dissection of the body.*—Liver much enlarged in size, containing a large quantity of matter in its interior; the spleen likewise enlarged in size but without purulence in its interior.

CASE III.

September 10th, 1814.—William Alls, of a plethoric habit, attacked in the evening with head-ache, thirst, pain in the right hypochondrium—increased by pressure, cough—difficulty and pain in breathing; pulse 120 strokes in the minute; skin warm

CHAP. I.

and dry; tongue foul—covered with a yellow fur; body costive. September 11th,—admitted into hospital about noon: bled to the extent of forty-eight ounces,—blood buffy: pulv. antim. jacob. gr. viii., calomel gr. xii.: warm bath; and, at the distance of an hour, a solution of purging salts. Evening,—bled to the extent of thirty-two ounces: blister to the side: calomel and James' powder repeated. September 12th,—pain continues—increased by deep inspiration and by pressure; pulse frequent and quick;—one bilious evacuation in the night. Bled to the extent of thirty-two ounces: tepid bath: calomel and James' powder repeated. September 13th,—three bilious evacuations—of a green colour during the night,—one in the morning; the pulse 100 strokes in the minute—comparatively soft; the tongue still foul; the skin cool and moist; the pain of the side gone: calomel and James' powder continued: the calomel increased to twenty grains twice a day. September 14th,—the mouth slightly affected by mercury: calomel omitted. September 16th,—no complaint. September 21st,—discharged.

CHAPTER II.

Forms of Febrile Action, as manifested in the Organs of the Middle or Thoracic Cavity.

SECTION I.

Pneumonic Forms of Febrile Action—Course Progressive.

CHAP. II.

Locality.

THE pneumonic is an important, and, in some countries, a frequent form of the action of a febrile cause. It is more common, according to the laws of the annual revolution, in some seasons than in others; and it is sometimes epidemic in seasons and places to which it does not naturally belong. It is not uncommon among European soldiers in the islands of the West-Indies; and it is the most common and the most dangerous form of disease that occurs among the transplanted natives of Africa,

CHAP. II.

whether such as are enrolled in the lists of the army, or as are reserved for field labour—particularly in islands of a dry air and broken surface. Pneumonic fever presents itself under a great variety of aspect; but I only comprehend, in this limited sketch, two or three of the more prominent of the forms.

History—Sanguine Suppurative.

A. Pneumonic fever occurs frequently under the predominance of the sanguine temperament. It then ordinarily begins with a sense of cold and chilliness; sometimes with a considerable degree of shivering, even rigor accompanied with severe aching of the back, limbs and joints, pain of the head, thirst—sometimes nausea and even vomiting. Respiration is hurried and difficult, sometimes impeded by pain diffused through the whole of the thoracic cavity, sometimes by pain at a particular point only; the breath is hot, the lips generally dry; the tongue foul, sometimes dry, sometimes moist; the eye full, sometimes prominent or protruded—hot, painful and red. The countenance is flushed, even to crimson—more or less agitated and confused; the urine is red and scanty; the body costive; the skin is ordinarily hot, sometimes very hot and dry; the pulse is frequent and hard, sometimes full and strong, sometimes irregular and intermitting. Cough is more or less troublesome,—in the early period it is dry, teazing and without expectoration.

The tumults of invasion generally subside in ten or twelve hours, but the distresses soon recur with

violence. The course proceeds with temporary abatements and aggravations—most commonly to the seventh day, when signs of crisis become manifest—favourable or fatal. The termination is sometimes effected, by sweat, expectoration and general relaxation of excretories, sometimes by local suppuration and abscess. The course is however sometimes more rapid than what is here stated—the termination premature by suffocation from local plethora.

DISSECTION.

If this form of disease be neglected, or treated feebly in the early period, it often terminates fatally. Adhesions are sometimes formed, during its continuance, between the pleura and the membrane which covers the lungs. In the more genuine form of the disease, the morbid appearances are usually confined to the substance of the lungs themselves; which are sometimes suffocated or rendered impermeable by a quantity of accumulated blood—sometimes without evidence of regular inflammatory action. The act is however ordinarily suppurative; purulence in greater or less quantity sometimes fills the cells of the lungs without communicating with the bronchial vessels sometimes it communicates and finds a passage through the trachea.—The action of this form of disease is often extended to the pericardium, and even to the substance of the heart itself. The heart for instance is inflamed, the surface red and rough. The pericardium,

CHAP. II.

in such case, is sometimes distended with water; sometimes, instead of intervening fluid, it adheres to the substance of the heart as if it were its proper coat.—The symptoms are here ambiguous from contiguity of parts, in so much that it is difficult, if it be in fact possible, to discriminate the relative degrees of diseased action in the different organs within the cavity:—they are only known correctly by what presents in dissection.

CURE.

Cure at Commencement.

If the patient be submitted to medical care at an early stage of this form of disease, the line of proceeding is plain and simple, viz. abstraction *of blood* from a large orifice—in the shortest time possible, and carried to the extent, whatever that may be, of effecting remission of pains and relaxation of strictures so perfect that the patient may become capable of breathing with ease and freedom under all modes of trial. Freedom and expansion of pulse, relaxation of surface, sickness, vomiting and evacuations by stool often supervene upon bleeding. When the evacuations are copious and effective, the disease may be said to be cured, at least the course is arrested and the dangers are removed for a time. But as the dangers, though temporarily removed, are liable to recur after a short interval, it is advisable, with a view to prevent such recurrence, to administer emetic tartar, so combined with opium, camphire and nitre as to occasion more or less of nau-

sea, to allay irritations and to excite and maintain a moderate and equable perspiration on the surface. This effect will be forwarded by the application of warm fomentations to the extremities: the chances of recurrence will be in a manner precluded by covering the breast and sides with large and strong blisters.

I think I may venture to say that if the case be submitted to medical care at an early period, that is, within twelve or fourteen hours from the commencement, the cure is within the command of the medical art, and that if we fail in effecting it we fail only through error in the manner of applying the means. On the contrary, if the course be advanced to a late period, viz. the fourth or fifth day, the means, though still the same as those already stated and still to be directed to the object by the same principle, cannot be safely carried to the same extent in application, nor do they give the same promise of success to the effect however carefully applied. It often happens, in the condition under view, that the suppurative stage is considerably advanced before the patient is brought to the hospital. When that is the case, the disease can only be prevented from going to the extremity of its course by nice discriminations of condition, and great decision and skill in the adjustment of remedies. Abstraction of blood still holds its place; and, though it cannot be carried to the extent of arresting the disease precipitately as in the early stage, it is still necessary to carry it to the extent of relieving the distress of the lungs, and of effecting a change in

Advanced Stage.

CHAP. II.

the organic condition of the part. When that has been done by the abstraction of blood, and when the thorax, breast and sides have been covered with blisters with the view of maintaining a strong superficial irritation, an emetic—antimonial in preference, is to be given immediately, assisted by all the means which are calculated to give effect to the operation of emetics. Bleeding is to be repeated as occasion may require; also emetics, diaphoretics, fomentations to the extremities, muriate of ammonia; and in short, all those means which excite activity in the absorbent vessels of the lungs, which excite the tide of circulation towards the extreme surface, which attenuate the adhesive quality in the fluids, or which retard the course of the suppurative process.—Such present themselves as remedies in the present case: they are to be employed in combination or succession in such manner that the ground which may have been gained by the first step be not only maintained, but that positions be gradually advanced until the point in view be encompassed and assured.

Phlegmatic adhesive.

B. The next form of pneumonic febrile action is somewhat obscure in its history. It prevails epidemically at particular seasons and in particular districts of certain countries; and, as left to its own course, it commits great ravages on human life. It belongs to the phlegmatic temperament in excess—the act manifested in the interior substance of the lungs. The invasion is sometimes sudden, oftener gradual. Respiration is impeded, but not impeded

History.

by pain preventing the expansion of the chest,—the impediment refers itself to defective dilatability. Cough is sometimes troublesome; or rather the desire to cough, without the power to cough freely, is urgent; where the form is concentrated there is no expectoration. The pulse is usually slow as a febrile pulse—soft, regular and full, particularly in the earlier periods; it is often irregular and oppressed, or intermitting in the latter. The eye is heavy and torpid—the white sometimes of pearly whiteness, sometimes sallow or dusky. The countenance is torpid and inexpressive—statue like—pale and of a doughy appearance; sometimes there is a circumscribed pink coloured blush on the prominent part of the cheek. The skin is sometimes dry, oftener greasy, clammy and inelastic. The tongue is oftener clean than foul; the saliva is thick and ropy; and there is frequently an unpleasant mawkish taste in the mouth. Thirst is rarely much increased, but it is not satisfactorily satiated by drinking. Respiration is accelerated; and, as the disease advances, the expansion of the chest becomes difficult—the sensation connected with impediment peculiarly distressing. Cough is rarely severe; but it is ineffectual. Diarrhea is not uncommon: it often alternates with delirium towards the close of the disease.—The blood, drawn from the vein and suffered to cool, ordinarily remains in an uniform mass of a dark azure blue: it rarely, or it only imperfectly separates into parts in the first stages of the disease.

DISSECTION.

The lungs are not inflamed in the usual meaning of the word, that is, they shew no increased vascularity, at least no increase of vessels carrying red blood. The whole is solid, agglutinated into a mass by coagulated lymph so as to be impermeable to air:—the surface is sometimes covered with a thick coating like leather. Water is often effused into the cavity of the thorax, into the mediastinum, even into the pericardium; and the larger vessels, near the heart, are often so filled with pieces of coagulated lymph as must have materially impeded the passage of the blood, even before death.

CURE.

The cure of this form of disease is difficult; or, more properly speaking perhaps, the obscurity of the symptoms is such that the practitioner rarely attains a true view of the condition at an early period; consequently rarely applies remedies in sufficient quantity to produce a strong and decided effect. The dissection of the dead body shews what ought to have been done, and brings conviction, when too late, of omissions and errors.—If a patient, exhibiting the characters of the form of the disease now under consideration, be submitted to medical care at an early period, it is recommended that the body be immersed in a bath of high

temperature, that it be rubbed with soap and scrubbed with hard brushes so that the skin be warmed and animated; and, this being done to proper extent, that a vein be opened in the arm and blood abstracted in large quantity, viz. from two to four pounds. The colour of the blood often changes from dark red, or azure to bright red under the act of abstraction; and, while the colour changes, the stream often flows with increased force and velocity. Fainting, under bleeding, does not often occur in this form of disease; but, though there be here no danger from fainting or other accident in consequence of copious, even profuse bleeding, it is perhaps better not to go to the extreme point of safety at one abstraction. When the patient is removed from the bath, dried, rubbed dry with hot flannels, with oil and ammonia, and disposed in bed in a warm and well ventilated apartment, hot tea or other beverage, in which kali is dissolved in the proportion of a drachm to a quart, is to be given at frequent intervals; and, at the distance of an hour, when the alkalized beverage may be supposed to have dissolved or rendered fusible the phlegm which lines the stomach and the interior of the intestinal canal, an emetic—antimonial in preference, presents itself as first in time among the remedies. The operation of the emetic is to be assisted by infusion of chamomile in which is dissolved a certain proportion of prepared kali. After its operation is finished, a laxative is generally proper; and infusion of senna, with the addition of a certain

CHAP. II.

proportion of kali and acetated water of ammonia given in divided doses, is one of the best. If the disease, though diminished in degree still exist, notwithstanding the employment of the means alluded to, the vein is to be re-opened, the blood allowed to flow until the power of expanding the chest freely be perfectly recovered. The body is to be again rubbed with oil and ammonia; the muriate of ammonia given internally in large quantity, or white vitriol in such quantity as to occasion vomiting, followed by plentiful dilution with alkalized beverage, —tea or other liquid. Sulphur—about two scruples or one drachm, mixed with honey in the form of electuary and given once a day, presents itself on this occasion as a remedy of no mean virtue. Large blisters, even so extensive as to cover the greater part of the thorax, rank on this occasion among the preventatives of recurrence. They may be supposed to do this by stimulus of counteraction, if they have no direct effect on the condition of the blood.

C. The two preceding conditions of pneumonic affection are strictly speaking simple conditions, the morbid action being, for the most part, confined to one series of parts, and generally confined within the substance of the lungs themselves, whether the act be suppurative or adhesive. The next form which I notice is more complex, in as much as the morbid action is manifested on the sanguiferous,

Mucus excretive.

lymphatic or serous system of vessels at the same time, or in succession;—hence the effect is suppurative, adhesive, or excretive.—This disease, which is the form of malady usually termed pneumonia, varies in degree of force and also in mode of action according to the predominance of the existing constitutional temperament, viz. sanguine, phlegmatic or serous. It usually begins with cold and shivering, sometimes with coldness and shivering of intensity, sometimes with irksome sensations, distressing pains in the loins and limbs, stricture and tension about the joints. There is, for the most part, more or less of head-ache—the pain is sometimes dull and irksome with giddiness; sometimes sharp, lancinating and rending under the act of coughing, of moving, or of being rudely moved. The heat of the body is usually higher than the natural heat; sometimes it is acrid and pungent, sometimes soft and mild. The skin is sometimes dry, harsh and hot; sometimes damp, greasy and cool. The eye sometimes glistens with animation; sometimes it is dull, torpid and vacant. The countenance corresponds in some degree in its appearance with that of the eye,—sometimes flushed, confused and anxious; sometimes dull and heavy, pallid and greasy, or dingy. Nausea, and even vomiting is not uncommon, especially where the cough is urgent without expectoration. The body is generally costive in the early stage; often loose, even purged in the latter. Thirst is irregular—sometimes great, accompanied with hot breath, a foul and dry tongue; sometimes

CHAP. II.

it is moderate, the tongue foul, but moist. The general sense of feeling is often irksome, painful and distressing. There is neither rest nor sleep; there is often dozing and drowsiness. Respiration is generally hurried—of a narrow compass, but without sense of pain or assignable cause of impediment. The horizontal posture is irksome—sometimes intolerable; and it is seldom that the patient lies equally well on both sides. Cough is more or less troublesome; it is sometimes sharp, dry, incessant, sometimes at intervals only—moist or dry as may be. Expectoration is sometimes thin, acrid and scanty; sometimes it is copious and thick—tough or glutinous,—sometimes fluid, free and bloody.

The disease, formed on the basis here given, proceeds towards a termination—favourable or fatal, with periodical abatement and aggravation, but rarely with such abatement and aggravation as can properly be termed remission and paroxysm. The symptoms acquire force as the disease proceeds to its termination, whether favourable or fatal. This happens sometimes on the fourth or fifth day, more commonly about the seventh. In the favourable case, the pulse expands, the skin relaxes, expectoration becomes copious and free, sometimes bloody, sometimes concocted, sometimes copious—but crude like jelly. In the opposite or unfortunate case, the pulse contracts in volume, increases in frequency, loses regularity, hesitates or intermits; the skin remains dry, or it becomes damp and greasy—without warmth and animation. Expectoration diminishes,

sometimes ceases altogether; respiration becomes more and more laborious; watery diarrhea supervenes not unfrequently; sometimes it interchanges, or is superseded by delirium—sometimes of a low kind, sometimes high and outrageous;—the scene in such case is usually closed within the eighth day. In other instances, suppurations are formed in the substance of the lungs; the acute form is judged; the final event protracted, whether the suppurated matter be confined in a sac, or, penetrating into the bronchial ramifications, it find passage through the trachea.

DISSECTION.

The appearances, which present themselves on dissection of the dead body, are more varied and more extensive in the present than in the preceding forms. There is here for the most part adhesion, sometimes extensive and firm, between the membrane which covers the lungs and that which lines the thoracic cavity. The substance of the lungs themselves is often inflamed—dense and firm in some parts like liver; sometimes suppurated—the matter confined in a sac, or communicating with the bronchia and passing into the trachea according to contingence. In other cases, the substance of the lungs is conglutinated partially or generally so as to be imperfectly permeable to air; and, in many of these cases, the bronchial vessels are filled with secretions of various consistence and quality. In

CHAP. II.

some instances, the thoracic cavity is filled with pale or clear watery fluid; in others, with a fluid of a whey colour in which float numerous shreds of coagulated albumen. In either case, if the quantity of fluid effused be considerable, the lungs are compressed so as to be altogether unfit for respiration. The heart often partakes in this form of disease of the morbid action, the traces of which are so conspicuous in the lungs. The pericardium for instance is often inflamed; it adheres irregularly to the contiguous parts, sometimes to the surface of the heart itself. It generally contains fluid in unusual quantity—sometimes clear water, oftener turbid, dirty looking serum in which float shreds of coagulated albumen. The substance of the heart itself is sometimes *highly* diseased—covered exteriorly with a crust of albumen like pancake; the surface underneath the covering red and fretted as if under an act of unnatural secretion.—The cavities of the heart and some of the larger vessels are in many cases filled with firm substance like amber.

CURE.

Cure at commencement.

The means of cure, and the principle which directs the application are the same here as in the preceding; the mode and measure vary according to circumstance. If the patient be submitted to medical care during the first twenty-four hours from the attack, whether the predominant feature of the action be manifested on the sanguine, phleg-

matic or serous temperament, it is advisable to immerse the body in a warm bath of rather high temperature; and, after a certain continuance under immersion, it is recommended, as indispensable to further proceeding, to open a vein in the arm, and to abstract blood in quantity sufficient to effect a change in the condition of the suffering organ. It is impossible to say *a priori* what quantity will be sufficient to effect this purpose; but, whatever the quantity may be, I beg the physician to bear in mind that the effect is to be assured, that is, the power of expanding the chest, without pain or impediment, is to be restored before the operator be permitted to bind up the arm. After the arm is bound up, the patient is to be suffered to remain for twenty minutes or half an hour in the bath, with a view to ascertain whether or not the change contemplated be perfectly attained. If the point be gained, the body is to be removed from the bath, wiped dry and rubbed dry with flannels, an emetic given immediately under all the forms of preparation that are suitable to the case; and, after the operation of the emetic, alkalized infusion of senna, with repeated doses of acetated water of ammonia, presents itself as a proper laxative.—This form has appeared to myself to be an efficient remedy for the purpose of opening the bowels and at the same time of acting upon the skin.—The ground, which may appear to have been gained by the process alluded to employed in combination or in succession, is often assured by the application of blisters to the breast and sides, es-

CHAP. II.

pecially as aided by large doses of muriate of ammonia, sometimes by small doses of powder of ipecacuanha with some grains of soda,—the ipecacuanha so measured, and so timed as to occasion and to keep up more or less of nausea.

If the above means be properly and diligently applied in the early stage of the disease, the course is for the most part arrested, and health is speedily restored if all the necessary considerations which bear upon convalescence be duly attended to. But if the disease be advanced in its course before it be submitted to treatment, or if it be treated by feeble means so as to meet with little interruption, the dangers increase and the chances of the good effect of remedies diminish. Abstraction of blood still holds its place among curative means, and, notwithstanding advanced progress and apparent debility, the quantity abstracted must still be such as brings relief, even if it should amount to three or four pounds. If the expectoration be tough and scanty, breathing over the steams of warm water to which ammonia, mustard or other stimulant is added, is often of considerable service. Dilution with beverage, in which prepared kali is dissolved in greater or smaller proportion, is essentially useful—and emetics of white vitriol are of the greatest benefit, especially where the secretions have been prematurely suppressed. Seneka is recommended in several conditions of this disease, but my own experience of it is not extensive. If cough be teazing, dry and irritating, or if it be excited by thin and acrid deflux-

Advanced Stage.

ion, opium, joined with antimonials or ipecacuanha, may be given with safety and advantage; but opium, if the expectoration be tough and glairy, is not only improper but dangerous in an extreme degree.

CASE I.

January 9th, 1801.—Snipe was brought to the hospital on the 6th inst. with symptoms of fever and severe cough. The countenance was dull, cold and phlegmatic. Some blood was drawn from the arm, but not to great extent; a purgative mixture was given immediately afterwards. The blood did not separate when allowed to rest;—it remained an homogeneous mass like jelly of a sky-blue colour. January 7th,—He muttered in the night as if delirious, but notwithstanding slept at intervals. The breathing thick and laborious; the chest not duly expanded in respiration, but not restrained by sense of pain or local impediment. There is cough, but no pain from coughing; expectoration not copious,—it is glairy and jelly-like. Large blisters applied to the chest: squills, assafœtida and gum ammoniac given in quantity as expectorant. Pulse small and confined: repiration short. January 8th,—pulse contracts itself; expectoration decreases; the countenance pale and pasty; no complaint of pain any where; comatose, or drowsy. January 9th,—coma, stupor, eye heavy and dull; expectoration suspended. Died in the evening. *The body opened.* —The lungs adhered firmly to the *pleura costalis,* particularly at the anterior parts which were covered with a yellowish matter, viz. a tough glutinous membrane like leather. All the interstices between the lobes were filled and agglutinated by jelly-like substance: and there was a quantity of coloured fluid in the cavity of the thorax: the pericardium contained matter of the same kind; the surface of the heart and root of the aorta were covered with a yellowish crust.

CHAP. II.

CASE II.

January 12th, 1801.—Cox, a large bodied man, of a heavy and torpid aspect, was brought to the hospital in the course of the day with symptoms of pneumonic fever. A few ounces of blood were drawn from a vein in the arm; a blister was applied to the breast; and he felt a little relief. January 13th,—easier, but not satisfactory. January 14th,—attacked in the night with palpitation and uneasiness at the præcordia of a peculiar kind; respiration short and thick—oppressed and imperfect—or without free expansion of the chest. An efflorescence has made its appearance on the face and breast not unlike measles, which prevail in the garrison. He was bled largely, (the quantity not stated) relieved in consequence, but not perfectly. The respiration continues to be laborious—with agitation at the præcordia of an unusual kind. He attempts to cough, but he cannot effect an open cough—and he does not expectorate. The pulse is strong and regular, and nearly natural in point of frequency; the heat is moderate, somewhat higher than the heat of health; thirst considerable, but not urgent. The vein was opened in the evening, but the orifice was small and a few ounces only were obtained. January 15th,—respiration somewhat more free after bleeding: he slept a little, and expectorated a little glairy mucus; had several evacuations by stool; the lips and countenance change colour frequently, appearing at times of a faint purple hue; the ideas are not under command—they wander after absent things; the eye is clear and glossy. 10 o'clock A. M.,—respiration high and laborious—confined, but confined by no impediment from local pain, or other assignable cause. Emetic: he vomited a little and expressed material relief, but still complained of palpitation at the præcordia—a sense of burning and a kind of uneasiness that words could not express. He expectorated a little glutinous matter—brought it up with difficulty. January 16th,—countenance of a leaden colour; expectoration suspended; the lungs have lost their expulsive power; he attempts to cough, but cannot effect it; the pulse frequent,

weak, intermitting:—diarrhea and delirium alternated with each other for the two last days. He died and was *opened*.—No adhesion or marks of external inflammation about the lungs; no water and no matter visible in the interstices or cells; the substance fair and smooth exteriorly; the interior agglutinated into a solid mass, not permeable, or scarcely permeable to air; yet, except in impermeability, the lungs presented no morbid appearance. The heart was uncommonly large and full of blood; there were coagulations of unusual firmness in the larger vessels.

CASE III.

January 14th, 1801.—Bingham had been ill of fever in pneumonic form, seemed to recover; and, after a few days of convalescence, was attacked suddenly, seemingly with a fit of asthma. Æther and laudanum were given in large doses, but without benefit: the pulse was not perceptible; the skin was cold; the countenance livid; the lips livid; the surface bedewed with a glassy cold sweat; respiration performed only by gasping at long intervals; the intellect clear. He died and was *opened*.—The cavity of the thorax filled with water; the lungs collapsed as if compressed by weight of fluid; the pericardium distended with fluid to a great extent; the heart compressed by its pressure so as to appear of a small size.

CASE IV.

April 12th, 1801.—Cook brought to the hospital on the 9th, complaining of distress and uneasiness in the chest, particularly about the site of the heart. The attack was sudden,—the countenance dry and pasty from the beginning; no perceptible increase of vascular action. Bled to the quantity of twenty-four ounces: emetic—after its operation was finished, immersion in the warm bath. No material relief; uneasy sensations rather than pain still continue in the chest, especially in the left side and under the sternum. April 13th,—scanty expectoration—tough as glue, and of a pale orange co-

CHAP. II.

lour; the pulse small, frequent and compressible—without elasticity or force; the tongue more red than natural—not foul; the skin cool and generally dry; the countenance dingy with circumscribed flushings of the cheeks; pains, or rather uneasy sensations about the region of the heart; the body open,—more properly purged; the eye glassy—half open; the aspect cadaverous. April 14th,—the tongue neither foul nor dry; the eye glassy—half shut; flushing of the cheeks—circumscribed to the cheek bone; the skin of a dingy yellow hue; the pulse frequent, small and weak. He died in the evening and was *opened* next day. The lungs adhered to the *pleura costalis* in various places; their surface was covered and their interstices were filled with a tough, greasy yellow matter: water was effused into the cavity of the thorax and also into the cavity of the pericardium; the pericardium and mediastinum were covered with greasy, tough matter of the same kind as that which covered the surface of the lungs and filled their interstices; and, besides this, there were amber coloured coagula of a very firm consistence in the larger vessels near the heart.

CASE V.

April 16th, 1801.—Pack, an athletic man, of a full habit and florid complexion, seized with fever in pneumonic form on the 12th. Bled: an emetic: after the emetic, small doses of calomel at intervals. Appearances were rather promising for the three first days, though the breathing still continued oppressed: the expectoration consisted of mucus mixed with blood—equally mixed. To-day, the expectoration is less free; there is pain and uneasiness in the left side with a sensation as of choaking; the belly loose; the intellect rather confused. Bled to the quantity of a few ounces: blisters applied to the breast and sides. April 17th,—rather easier in the morning; towards evening delirious; the expectoration suspended; breathing very laborious; cheeks flushed—at times livid; the pulse intermits—scarcely more frequent than natural and not strong. April 18th,—delirious in the night; now more calm,—but still

confused; scanty expectoration; respiration somewhat more free; intermission of the pulse less remarkable; vascular action upon the whole more energetic; the skin dry; the tongue dry; feelings less irksome. April 19th,—the night more tranquil; respiration more free; no perceivable intermission of the pulse; expectoration increased, viz. thick, white mucus—concocted—not tough and glairy; the skin dry; no delirium. April 20th,—expectoration more free; pulse regular—not frequent; tongue still dry and red; no actual crisis. April 21st,—seems better—but without signs of crisis; the pulse peculiar—not easily defined—without energy and expansion; expectoration more free; the voice hoarse as if there was impediment about the throat. April 22nd,—seems better,—the dangers not past; the pulse peculiar; the skin and tongue dry. April 23rd,—seems to improve. April 24th,—the same. April 25th,—no cough; no expectoration; hoarseness continues; the cheeks flushed occasionally. April 26th,—much the same. April 27th,—does not advance; respiration more laborious; expectoration suspended; hoarseness continues; the cheeks flushed; the general aspect withered and dingy; the tongue dry; the pulse more frequent than natural—and irritated withal. April 28th,—loses ground. April 29th,—respiration more difficult; the cheeks flushed; the countenance dingy; the hoarseness continues; the pulse singular. April 30th,—worse. May 1st,—worse. May 2nd,—he died in the morning. *Opened* in the afternoon.—The lungs adhered every where to the pleura; the pericardium adhered so firmly to the heart as if it was its own proper covering; the substance of the heart itself was singularly changed, viz. thin and flaccid as if it had not been of muscular structure—its vessels in a manner bloodless. The larger vessels near the heart were filled with firmly coagulated masses of lymph; and, together with this, there were chalky concretions in the substance of the lungs, the whole interior surface of which was so changed as to be nearly impervious.

CHAP. II.

CASE VI.

April 20th, 1801.—Harris, attacked on the 18th with pain in the right side accompanied with symptoms of fever. To-day,—bled largely and blistered: no relief. April 21st,—bled again: no relief; the seat of the pain in the right side under the right breast—severe in the act of common respiration, intolerable in attempting to cough or expectorate. April 22nd,—no relief. April 23rd,—no relief. April 24th,—died in the morning. *Opened* in the afternoon.—The right lung impervious—solid like a steatomatous mass and adhering firmly to the pleura—the connecting medium thick and firm as leather; the other parts within the cavity of the thorax not materially diseased.

CASE VII.

May 9th, 1801.—Bailey, who had been in hospital about three months ago, recovered and was discharged in apparent health. He returned about two weeks since, suffering under pneumonic affection, which had been of some standing and had considerably impaired the health. He was bled three different times, but not to great extent at one time; the side was blistered repeatedly, and he appeared to obtain slight temporary relief. The fever subsided, at least abated; but marks of hectic were evident. He sweated profusely at times; the face was dirty and greasy as if it had been washed with dirty water and imperfectly dried; the cheeks flushed occasionally as in hectic. He coughed much, and violently; expectorated a little tough or frothy matter, but no concocted secretion, or actual purulence. He breathed with difficulty and labour, and latterly could not breathe at all except in the erect posture; the countenance was greasy and dirty; the skin clammy; the eye glossy. He died on the 9th of May,—the body was *opened*.—Matter, to the quantity of a quart or more, was contained in a sac, which was still entire,—no part of the contents had yet found passage into the branches of the bronchia.

CASE VIII.

May 16th, 1801.—Mc'mullin—brought to the hospital in the evening of the 11th, breathing most laboriously but without pain in the breast. The eye was muddy; the tongue foul; an emetic was given immediately and a blister was applied to the breast. May 15th,—the breathing very laborious and difficult; he coughs and expectorates something glutinous; the countenance and lips of a leaden colour; the aspect dull and clouded; the tongue foul, but moist; the heart beats high—without corresponding force in the arterial pulsations. Bled to the extent of fifteen ounces,—somewhat relieved;—the pulse did not expand in consequence; the cough soft and not violent; little or no increase of external heat; the pulse regular—not much increased in frequency; the heart beats, or struggles; head-ache is rather severe. To-day,—bad night; no complaint of local pain; the circulation fails; the skin and countenance are cold and livid; the pulse is scarcely perceptible; the motion of the heart itself is obscure; the stomach inflated;—black matter like grounds of coffee ejected by vomiting. Died in the course of the day: the body *opened*.—The right lung adhered to the pleura, the connecting membrane tough and strong and bespangled with curdy substance like coagulated milk. A whey coloured fluid floating in the cavities and interstices; the lobes of the lungs held together at their outer margins by a tough yellow membrane. The veins of the pleura and mediastinum, &c. turgid,—filled with black blood; the pericardium red and inflamed exteriorly; the cavity distended with whey coloured fluid; the heart itself covered closely by a tough yellow membrane bespangled with curdy looking points; great masses of congestion among the parts contiguous to the heart; gangrene commencing in the small intestines:—general disposition to watery effusion.

N. B. The above cases occurred in England; and they are inserted in this place—not as examples of practice, but as illustrating the ravages of a disease that was only feebly opposed by art. The histories

CHAP. II.

present some peculiarities, especially in what respects agglutination of the lungs, that are rarely observed in tropical climates.

CASE IX.

December 27th, 1813. (West-Indies).—David Oliphant, aged 30, habit full, attacked, on the evening of the 26th inst., with symptoms of violent pneumonic fever and admitted into hospital on the afternoon of the 27th. He coughed much; breathed with difficulty; pain in both sides of the chest—increased in coughing or breathing deeply; thirst considerable; pulse frequent and sharp; tongue white; skin hot; body costive. Bled to the extent of forty-four ounces at the time of admission,—blood buffed on the surface: calomel gr. vi. extract: colocynth, pulv. jalap gr. viii. immediately after bleeding: tepid bath; and, in the course of an hour, infusion of senna with sulphate of soda. December 28th,—the pain in the right side of the thorax relieved; that in the left still continues—together with cough; the pulse frequent and sharp; the tongue is white; the body has been freely opened. Bled to the extent of thirty-two ounces: purging mixture—with a portion of emetic tartar sufficient to excite nausea: blister to the side. Evening,—James' powder gr. vii. December 29th,—pain of the breast and sides removed; pulse soft—nearly natural; tongue clean; body open. James' powder repeated. December 30th,—cough gone; body open; tongue clean; pulse natural. December 31st,—no complaint: James' powder repeated. January 1st,—improves. January 5th,—discharged in perfect health.

D. The forms of pneumonic disease, described above, rank indisputably in the febrile class. The forms included under the present head are more varied; and there may be doubts with some concerning the propriety of referring all the varieties here noticed to the operations of a cause strictly and pro-

perly febrile. It is generally believed that phthisis pulmonalis is a disease of rare occurrence in tropical climates. I do not know that the belief is well founded; for the returns of military hospitals show that the number of persons who die of pulmonary diseases, whether proper phthisis or contingent ulcer of the lungs, is as high in the West-Indies as it is in most European countries. The forms of phthisis connected with the scrophulous habit is indeed comparatively rare; but congestions and ulcerations in the lungs are frequent and fatal, particularly among Africans, the lungs of a few of whom, when death happens from a contingent cause, are found on dissection to be in a perfectly sound state. Persons of the consumptive habit, even persons far advanced in consumption, sometimes recover their health by migrating from Europe to a warm or tropical climate; persons, who are threatened with consumption in the West-Indies, sometimes also recover their health by migrating to Europe or other northern latitude.—Hence, as there is the authority of fact on both sides, we are led to conclude that there is more in the sea voyage and in the change of climate, which changes the condition of habit, than in the tropical climate itself, simply as climate.

Histories.

The commencement of many of the forms of pulmonary disease, as they appear among the soldiers of the army, European or African, is obscure; sometimes recognized only by a short dry cough; by more or less impediment to respiration under exercise or acts of exertion; by more or less accelera-

CHAP. II.

tion of pulse under exercise, viz. walking, running, or ascending a height. The flesh sometimes wastes fast, sometimes not materially. Expectoration takes place in many, perhaps in most: it is of different kind and character—sometimes purulent, sometimes mixed, and sometimes changed secretion of an undefinable nature. Sleep is seldom sound and undisturbed in pulmonary disease: it is often interrupted by coughing, sometimes by disagreeable perspirations—and sometimes by difficulty, or impossibility to lie on one side. Where the flesh wastes, the strength declines in most cases—sometimes slowly, sometimes rapidly. Chills and flushings of heat are observable in the early stage in some; in others not until a late period; and in many not at any period. The various forms of diseased action, which take place in the substance of the lungs and parts nearly connected with the lungs, advance by slow degrees in some cases, by rapid strides in others; and in many cases, the existence of the derangement is of so little detriment, and the signs of its existence so obscure, that a pulmonary disease is only known to have existed by inspection of the body after the death which has happened from the violence of some other cause.

DISSECTION.

Morbid appearances are various in the numerous subjects who die of pulmonary diseases. 1. The substance of the lungs is changed in part, or through

the whole into something like *amadou* or touch-wood—without ulceration. Respiration in such case, where the history is known, is not clear and free; it is obviously hurried by exercise and disturbed by exertion: the general health is impaired; but rarely so impaired as to send the subject to the hospital. Blood, drawn from the veins of the persons under view, is ordinarily pale in colour—not unlike old Madeira wine. 2. The lungs are not ulcerated in any degree, or they are ulcerated only partially; the structure is notwithstanding changed—converted in some places into chalky concretions, or crowded with gritty matter like sand stone. In persons of this description, short cough, impeded or straitened respiration, impaired vigour, are the conspicuous symptoms. 3. In other and more numerous instances, fatty, or cheese like substances, of different magnitude and different consistence, are dispersed throughout the substance of the lungs; some of them ulcerated, some of them inflamed, others indolent. The pulse, in such case where the previous history is known, is ordinarily more frequent than natural; the cough is troublesome; alternate chills and flushings are not uncommon; marks of hectic are obvious; expectoration irregular—sometimes pure purulence, sometimes purulence intermixed with phlegm and mucus—the mucus glairy and glutinous. 4. Certain parts of the lungs are thickened—rendered firm and solid as the substance of liver in some instances, —the structure changed without marks of what

CHAP. II.

is usually termed inflammation: the parts are impermeable to air—the appearance often such as if it had existed for some length of time. 5. In numerous instances, and generally in consequence of pneumonic fever in subjects of the sanguine temperament, abscesses of greater or less extent occupy the substance of the lungs after death;—in some, the lungs are even almost totally consumed by them.

CURE.

The beginnings of the various forms of disease ranked under this head are often so obscure in their indications, that the foundations of the derangement are deeply laid before the case is submitted to hospital treatment. When the structure is changed into fungous amadou—generally or partially; into chalky or sandy concretion; into cheesy steatom or other tubercle; into solid, fleshy substance like liver; or, where suppurations have taken place, and open ulcer from tubercular abscess is actually established, the best aids of the art are ineffectual. They may perhaps mitigate pain and protract existence, but they rarely effect a radical cure. But though the case be hopeless after a certain stage of progress, according to my own opinion, yet I cannot help believing that if aid be applied in time, that is, before the disease has developed and fully established its character, the course may be arrested with safety and effect, health restored and permanently established by well considered

means judiciously applied, and rigidly and perseveringly followed up in practice for a length of time. The means recommended for this purpose may seem to be harsh, but they are not dangerous to the life of the patient, viz. abstraction of blood in quantity sufficient to effect a decided change in the condition of the diseased organ, and, immediately as that change is effected, vesication of the whole or greatest part of the breast and sides by blisters. The effect which is thus produced by the first impression is to be supported by the insertion of setons, the application of caustics, or other means that maintain superficial irritation and constant discharge from the exterior surface. These constitute the cardinal means of remedy. Emetics promise benefit by the general act which the emetic operation produces on the system:—of emetics, white or blue vitriol has the preference, particularly where there is disposition to pituitous congestions. Flowers of sulphur made into an electuary with honey, sometimes with the addition of a few drops of balsam of capivi, viz. the size of a nutmeg given every night at bed time, though a vulgar remedy, is notwithstanding a remedy which has very happy effects in many cases of pulmonary disease. Mercury is useful in certain forms of sanguineous or pituitous congestion: it is injurious in others, particularly in the scrophulous or irritable habit, viz. in the form more commonly termed phthisis.

CHAP. II.

The right management of diet and regimen is an object of primary importance in pulmonary forms of disease. In regard to diet, animal food of every kind is to be rigorously interdicted. Milk, whey, and the juice of pectoral herbs, viz. colts-foot, ground ivy, &c. ought, according to my own opinion, to constitute the whole sustenance. While the diet is simple, the regimen ought to be such as maintains the habit in activity. If there be no marks of actual organic destruction, exercise in a carriage, or on horseback is useful. If the strength can sustain severe exercise on horseback—such as hunting, hopes of recovery may be entertained with some confidence. The rapid successions of pure, moist and heavy air of moderate temperature act beneficially;—they are in fact the means which most safely and most effectually maintain and confirm the healthy action of the lungs where the continuity of structure is yet entire. Where the continuity of structure is broken and organic irritability highly increased, medicated airs—such for example as scarcely support flame, may be supposed, in reasoning on the case, to be serviceable: it is perhaps on this ground that the air in the 'tween decks of a ship, laden with ill cured sugars, has occasionally operated very fortunate changes on the health of persons far advanced in pulmonary consumption. The occurrences here alluded to were contingent, but they are well authenticated; and it is probable that the knowledge of the fact may be usefully applied on some future occasion to a me-

dical purpose. Besides exercise on horseback and medicated air, a sea voyage implying a change of climate, more particularly from cold to warm, from hilly, dry and healthy to level, moist and aguish, recommends itself strongly as judged by the reason of the thing, and it is found to be useful as proved by experience on many occasions.—It is by conjecture only that we attain an idea of the nature of the changed structure which obtains in pulmonary disease; but we know with considerable certainty to what extent we can safely go in the application of means which induce changes and subvert the bases of diseased actions of whatever kind they may be: we also know, when such actions have been subverted, the power which other means possess in exciting and maintaining the forms of action which are analogous with those of health.

CASE I.

March 4th, 1815.—A man of the 18th regiment of foot, recently arrived from England, was brought to the hospital at Barbados on the evening of this day. He had been unwell for two or three days on board of ship, but did not give a distinct account of himself. He breathed with difficulty and complained of pain in the chest, particularly in the left side. There was no increase of heat on the skin; the pulse was small and frequent; the skin was dry; the lips dry; he crept together in an odd manner. Bled to the extent of two pounds. March 5th, —bled to the extent of two pounds:—somewhat relieved; the pulse still low, obscure and frequent; the skin dry; the countenance rather improved; respiration more free. March 6th, —much the same. Evening,—uneasiness recurred; inability to expand the chest; he refers the sense of impediment or con-

CHAP. II.

striction to the left side near the heart; the pulse small and frequent; cough frequent and ineffectual. Bled to the amount of two pounds:—somewhat relieved. March 7th,—slept in the night; does not complain of pain unless when he coughs or swallows; pain under the short ribs in the seat of the spleen, particularly when the part is pressed; the pulse frequent—not free and expanded; the skin dry; he breathes high and laboriously; lies on the right side only; creeps together in an unusual manner. March 8th,—delirious in the night; pulse small and frequent; skin damp and soft; the eye clear; breathing less laborious; no pain at the short ribs on pressure; feeble pustular eruption at the angles of the mouth. March 9th,—slept in the night; now sensible; the pulse so frequent that it can scarcely be counted; the skin damp and soft; the tongue clean; the eye clear; breathing high and laborious—performed by elevation of the shoulders; does not complain of pain. Died in the afternoon: the body *opened*.—The parts within the cavity of the cranium sound in appearance: no marks of inflammation, and no effusion of fluid. The right lung adhered to the pleura,—the substance not materially diseased: the left lung firm and dense as liver—impermeable to air; the structure perfectly changed but without marks of inflammatory action, without suppuration, or even agglutination by means of coagulated lymph: the substance red, solid and in some manner fleshy: the spleen adhered to the contiguous parts—enlarged in size by congestion.

CASE II.

January 26th, 1815.—A man of the royal West-India Rangers, lately arrived from England, died in the hospital at Barbados some days after his arrival. The history of the subject was not known, but his appearance indicated that he had been at some time of his life in a station superior to that of a common soldier: the only information respecting his disease was obtained from dissection of the dead body. *Opened*.—The parts in the cavity of the cranium shewed marks of

inflammation apparently of some standing; for, besides turgid blood vessels, there were close and firm adhesions at the falx, effusion of water under the *pia mater*, and more than the usual quantity in the lateral ventricles. The lung of the right side adhered firmly to the pleura, the substance of the lung itself was of a dark colour and solid as the substance of liver—impermeable to air. The liver adhered to the diaphragm; enlarged in size and streaked through its substance like marble.

CASE III.

March 25th, 1815.—A man of the York Rangers, lately arrived from England, had been in hospital on account of an infectious fever which he contracted on board of ship in the passage. He recovered and was dismissed to barracks—apparently in health. He returned in a few days under symptoms which threatened life. The pulse was small and frequent; he coughed and desired to expectorate but could not get any thing up; he breathed high and laboriously, and also complained of pain in the seat of the spleen. He died in about twenty-four hours after he was admitted, and in about three days after he had begun to droop. *Opened.*—The left lung solid and dense as liver, totally impermeable to air,—the structure changed—the substance not gorged by subsidence of blood. The pericardium contained more than the usual quantity of fluid: the spleen was at least three times its natural size—gorged with black and clotted blood: the liver large in size, not apparently diseased, but presenting an external callosity which penetrated about two inches into its substance, evidently the cicatrix of a wound from a pointed instrument.

E. *Pneumonic Febrile Action—the Mode Retrograde or Liquescent.*

The forms of pneumonic fever noticed in the preceding pages are such as consist in progressive forms

CHAP. II.

of action, by the operations of which unnatural or diseased products of various kinds are brought into existence. The cure, as already stated, is effected primarily by arrest or subversion of the diseased action, secondarily by forcible excitement of action analogous with that of health. The form now under view is retrograde—more properly stagnant in its first stage. It belongs to the gangrenous temperament, whether connected with general epidemic causes, or causes that are local, partial and artificial. It occurs not unfrequently in the periodic forms of fever of the single tertian type; especially in the cooler months of the year, where the subjects are stationed on heights or eminences on the margins of ravines, or in narrow vallies between mountains in the vicinity of swamps and other foul grounds. It also occurs sometimes in the more concentrated of the continued forms; especially in very hot and very dry weather in crowded barracks or crowded transport ships; and it is a frequent form of relapse of fever, during damp and foggy weather, in crowded and infected hospitals in every country.

History.

This form of disease sometimes commences in a slow and insidious manner. The countenance becomes lurid, sometimes livid as in sea scurvy: respiration is impeded, but without obstruction from local pain. In other cases, it comes on suddenly; the countenance becomes dark and grim; deep and heavy sighing—with a sense of inability to expand the chest, is prominent; the pulses of the heart and arteries are at equal intervals of time, but they are

without energy—low and in some manner oppressed. CHAP. II.

DISSECTION.

The dissection of those who die under this form of disease shows various forms and degrees of sanguineous congestion, sometimes in both lungs, sometimes in one, and sometimes in one lobe only. The congested blood is sometimes fluid as gore—and generally diffused; sometimes partial, as if the gangrenous act had exploded on one point only.

CURE.

The proper management of the cure of this form of febrile action implies a great deal of difficulty. As the blood evidently stagnates in the substance of the lungs, abstraction from the veins presents itself as the direct means of commencing movement, and of thereby restoring circulation to an equal balance; but this end, so desirable and so essential, is not attainable without various accessory aids, some of them not easily procured or easily adjusted when procured. Immersion of the whole body, or of the feet and legs into a warm bath of rather high temperature, presents itself as primary and principal aid in forwarding the good effect of bleeding. If the stagnation arise from excess of quantity accumulated through the operation of a common cause, abstraction of blood, if properly conducted, necessarily and naturally removes it at the time; but a

CHAP. II.

train of stimulations judiciously directed to support circulation in the extremities and on the surface of the body, with well considered stimulation of the lungs by successions of pure, cool and dry air, are necessary to assure the permanence of the effect thus temporarily produced. The quantity of blood required to remove the primary congestion often amounts to a high measure, but the measure cannot be committed to prescription. It only can be judged by experiment made under the eye of the physician; and all that is necessary cannot always be abstracted with safety at one time. Besides bleeding, aspersions of the face and breast with cold water, gestation in the open air after bleeding, blisters to the chest, with a view to stimulate the surface and thereby prevent the chances of recurring torpor on the lungs, rank among the chief of the accessory aids. These will, I believe, generally succeed in the case alluded to if applied in time; but if the congestion be the effect of a sudden explosion which, in a manner we do not well comprehend, exhausts the activity of the vital principle, though the basis of the proceeding continue the same, the conducting of the different steps of the progress implies a management of extreme delicacy. The discriminations are difficult; and, though it be necessary that blood be abstracted in the case under consideration, it can only be abstracted with safety in small quantity at one time; it is however necessary to repeat the abstraction at short intervals until the point in view be gained. Immersion in

the warm bath, fomentations to the extremities; and more particularly gestation in the open air which, in as much as it comprehends the means of applying the congenial stimulus to the organ of respiration with force and impression in frequent succession, may reasonably be considered as an accessory aid of principal dependence. CHAP. II.

SECTION II.

Cardiac Form of Febrile Action—Course Progressive.

A. Another form of the action of the cause of fever manifests itself prominently on the organic substance of the heart. It is designated by the term *cardiac,* though I am perfectly aware of the ambiguity of the term. It is common in some countries or districts of country, even so common that it may be considered as in some manner endemial; in others it is rarely seen. The island of Trinidad produces a great number of examples of it, especially among the military who compose the garrison of that station. It usually commences suddenly, sometimes as intermittent or remittent fever—sometimes as continued fever. The symptoms, by which it is principally characterized, consist in peculiar agitation and frequency of pulse under the slightest bodily exercise, viz. walking, attempting to ascend a height, or stair, &c. Besides the increased numerical frequency of arterial pulsation, the strokes History.

CHAP. II.

often communicates an impression of sharpness as if the organ were preternaturally and peculiarly irritated, sometimes an impression of continuous motion—a labour feeble and singular of which it is difficult to give a precise idea. Together with this, there are occasional inordinate palpitations of the heart, pantings for breath under exertion, flutterings at the pit of the stomach, and unusual sensations of distress in the epigastric region. The disease, even at its earlier period is characterized by paleness, or absorption of colour from the skin; the lips and gums become pale and bloodless; the countenance assumes a pale, pasty or wax like appearance; the skin is ordinarily dry, generally smooth and polished; the white of the eye, destitute of red veins, is sometimes of a pearly whiteness, sometimes dingy yellow. The countenance, while pale and pasty, is dull and inanimate—statue like without expression; often puffed and bloated; the bulk of the body, instead of diminishing, usually increases with the progress of the disease.—The duration of the cardiac form of fever differs in different subjects, and according to different circumstances. It is soon fatal in some; it extends to months in others; and, where no extra causes concur to aggravate or accelerate the course, it sometimes becomes constitutional and extends even to years.—The fatal termination of the more protracted forms is for the most part effected through watery diarrhea, or by effusion of water into the cellular membrane, &c. producing dropsy—general or local.

CHAP. II.

DISSECTION.

The appearances observed on dissection, more especially of the forms which advance by slow progress, manifest changed structures and preternatural accretions in almost every part of the body. The change is more conspicuous in the substance of the heart than in any other part, and it is generally connected with such circumstances as impress the opinion that that organ had been primarily, as well as that it was prominently affected beyond all others. The volume of the heart is sometimes increased to twice or three times its natural size; its fleshy substance is dry, sometimes so dry as to be in a manner friable,—sometimes it is of a brown or pale brick colour. The base of the heart is usually loaded with a great quantity of substance firmer than fat, less firm than cartilage, pellucid in colour, and very much resembling the brawn of pork in its appearance. The larger of the blood vessels are usually filled with coagulated lymph, differing in density and compaction in different cases; the smaller vessels contain black fluid blood. The muscular flesh is pale and colourless throughout the whole body; the cellular membrane is more or less filled with a peculiar concrete resembling the brawn of pork. The coats of the alimentary canal, stomach and intestines are thickened, bleached or colourless,—converted into an artificial leather-like tube,—the sides preternaturally dense. All the in-

CHAP. II.

terior surfaces are dry—void of unctuosity or moisture, unless where dropsy has supervened in a late stage and apparently terminated life.

CURE.

The cardiac form of fever has rarely fallen under my observation at its commencement, for it is not endemic in those islands where I principally resided. What I have to suggest on the subject of cure is, therefore, little more than opinion formed from the appearances which present themselves on the dissection of the dead body. I think I may venture to say that we possess the power of arresting diseased actions in their early stages, in all parts of the organic system by means of abstracting blood from the circulating mass; and further that, when diseased action is arrested, we possess the power through other means of remedy of exciting actions which are analogous to those of health, even of maintaining such actions in a salutary course by artificial force. At the commencement of this form of disease, that is, before the new process of accretion has taken a constitutional form, the abstraction of blood in large quantity, notwithstanding the pale and bloated aspect of the subject, presents itself as the first remedy and the most important:—it is in fact the basis from which all the future proceedings derive their efficiency. After bleeding, an emetic, particularly an emetic of white vitriol, promises to be of benefit; and, after the emetic,

the purging tincture of aloes and myrrh, so often alluded to in this sketch, may be considered as the best of the purgative class. All the diets ought to be alkalescent, and all the drinks alkalized: rest and the horizontal position are necessary, even essential to the effecting of a cure. If the foundations of the disease have not been moved by the first abstraction of blood, it is proper that the operation be repeated at a short interval, and that it be carried to such extent as touches the point in view. Where the form of the disease is intermittent originally, or rendered so by treatment, peruvian bark with large doses of muriate of ammonia, acetated water of ammonia, white vitriol and alum, camphire, nitre, diluting and attenuating fluids, juice of herbs or other beverage, comprehend the means through which a cure may be effected.—The basis of cure depends, according to my view of the case, on changes induced upon the condition of the blood by diminution of quantity; the permanence is assured by maintaining the change induced through suitable combinations of stimulant and tonic power.

I am disposed to believe that the cardiac form of fever may be arrested, and that health may be restored by the means suggested if they be applied in time and applied to the full extent; but I am also sensible that, though arrested, the disease is liable to recur at a short interval, and that no means, simply medical, will be effectual in preventing the recurrence, if the subject be permitted to remain in a situation where the form in question belongs to the soil.

CHAP. II.

It is therefore recommended that, as soon as the progress is checked, the patient be embarked on board of ship, for a cruise at sea, under suitable regimen and discipline; or, if that be not attainable, that he be removed to another island, or to another district in the same island where the cardiac form rarely appears as original. The means stated promise to be effectual if applied in time; but, if the course be advanced, they cannot be expected to avail much, or rather to do any thing without the removal of the subject from the place where the disease arose, and where it prevails endemically. With removal, and a judiciously arranged plan of medical treatment, the case is not altogether hopeless; but, until the importance of saving life be calculated by a more enlightened rule than that which now obtains, the expectation of such arrangement is a vain expectation. The medical officer commands nothing beyond the walls of his hospital; and hospital treatment alone does not in the present case, however judiciously adjusted, command the patient's recovery.

From the power which mercury possesses in effecting changes in the existing actions of the system, certain preparations of mercury may be thought to be deserving of trial in the present case; but, though mercury may be useful, it is only auxiliary:—the radical part of the cure depends on abstraction of blood, change of climate, and medicated diet, viz. such means as are calculated to influence the condition of the circulating mass.

CASE I.

Barbados, February 8th, 1814.—A man, of the fourth battalion of the 60th regiment, was admitted into hospital about three months since under a feverish indisposition of no great apparent violence. He was bled to a moderate extent, and treated as a person suffering from fever of a milder kind. He said he was better, and was thought to be so; but he was not restored to health. The pulse continued hard—bounding as if it were irritated in a peculiar manner. Some blood was again abstracted, and he was somewhat relieved—but the irritative impression communicated to the finger by the pulse never disappeared entirely. He continued in the hospital: the feet and legs began to swell, but the swelling never was great; the appetite was good; he slept well, and always reported himself to be better. The lips and countenance lost their colour; the skin was dry, but smooth and polished; the pulse was irritated at all times—violently irritated under any thing like exercise. He tried a variety of remedies, viz. chalybeates, diuretics, digitalis, cicuta, purgatives—singly or in combination, but without perceptible benefit. The swelling disappeared from the feet and legs: he was thought to be better, when he was seized suddenly with faintness, stupor and oppression; not insensible; ghastly in aspect in an extreme degree:—he died in 18 hours from this attack. The body was *opened*.—No marks of disease on the dura mater,—the veins of the arachnoid coat and pia mater turgid—coagulated lymph effused underneath; water effused in the interstices of the brain, in the ventricles, at the base of the brain, and between the coats of the superior part of the spinal marrow. The heart exceeded the natural size by more than one half; the substance was thick, firm and solid—without abscess, or appearance of actual inflammation; it was enlarged on the base of the original structure only. Lemon coloured masses of coagulated lymph were found in the cavities and in the larger vessels near the heart. The liver was large, hard and gritty like free-stone—without abscess or purulence in any part.

CHAP. II.

CASE II.

January 19th, 1814.—A man of the 8th West India Regiment, African by nation, constitutionally unsound, that is, short winded and troubled with a cough, was brought to the hospital five days since with increased difficulty of breathing, but without any material complaint of pain; the pulse was low—scarcely to be felt; the artery small like a thread; the skin cold without animation: a vein was opened,—the blood did not flow:—nothing that was done gave any relief: he died. *Opened.*—The heart covered with a thick crust like pancake; the pericardium so distended with matter and water as to be in danger of rupture; the lungs diseased,—the structure constitutionally changed in various places to something like amadou or touchwood.

B. *Cardiac Form of Febrile Action—Course Retrograde—Act Liquescent.*

I have described, in a cursory manner, a form of febrile disease which may be termed cardiac progressive or generative, in as much as the production of new matter is implied in the act of the febrile process. I shall now notice, in the same cursory manner, the form termed cardiac retrograde or liquescent, implying a change in structure, or such abstraction of constituent matter as gradually undermines the power of the heart, and thereby occasions death. The invasion of this form of malady is sometimes sudden, the course rapid, the termination fatal. It is oftener obscure, the progress gradual, the termination remote. The naturally fatal

tendency of the disease is sometimes arrested by change of circumstances, viz. change of climate or season; and in this manner it is not unfrequently arrested by the supervention of winter. The form is sometimes periodic—generally of the single tertian type; sometimes remissions and exacerbations are scarcely, if in any degree, discernible, at least calculable. The principal characteristic marks consist in paleness and sallowness of the countenance, absorption of colouring matter from the lips, gums and cheeks. The tongue is pale—diminished in size, soft and flaccid. The skin is dry, smooth, polished and soft as satin; the flesh is flaccid—soft as wool; the eye is clear—of a pearly whiteness, sometimes of a lurid yellow. Debility is extreme, but there is rarely much uneasiness while the party is suffered to remain in one position; an attempt to walk, to accelerate the pace, or to ascend a height produces inconceivable distress. The pulse is always frequent; but it is so frequent under exercise, or any thing like exertion that it is scarcely possible to reckon it; and, while frequent it is without force or impression—palpitating feebly and irregularly as from excited effort. Respiration is hurried to panting under exertion; it is otherwise calm and easy. Strength fails; the body melts down, sometimes rapidly, sometimes slowly: —where slowly, dropsy or diarrhea are the more ostensible causes of death.

CHAP. II.

DISSECTION.

Where the disease has been of a protracted course, the principal cavities, viz. thoracic, abdominal or cranial often overflow with watery fluid:—where the progress has been rapid, dropsical effusions are less common. The appearance of the heart is that which of all others strikes the most forcibly. The heart is diminished in size and density; sometimes it does not weigh more than one third of its natural weight. It is loose and flaccid as a bag of wool or cotton, and pale as if it had been bleached. Colouring matter is absorbed, not only from the heart but from every part of the body. The fleshy parts are every where diminished in size—pale and flaccid. The stomach and intestines are pale—colourless as if they had been under a process of artificial bleaching.

CURE.

The first step in the cure—and without which others will be of little avail, consists in removing the diseased subject from the climate, or locality where the disease arose. The general principle of cure is the same here as in other febrile diseases, viz. change of the existing condition and reproduction of the condition of health;—the difficulty lies in the selection and application of the means by which it is to be effected. I much doubt if ab-

straction of blood will be permitted to rank among remedies in this form of disease. I cannot pretend to prove its utility by experience; but, if a case of the above description were presented to me before it were altogether hopeless, I do not hesitate to say that I should begin the proceeding by abstraction of blood, provided I had it in my power to command all the other means which I judge to be necessary to carry the view into effect. When bleeding has been premised, frictions of the skin with stimulating oils, washing the body with herring brine or other pickle, with cold salt water, exercise on horseback, or in a suitable carriage—rigid interdiction from personal exertion, a cruise at sea, change of air and change of climate, a medicated diet, viz. alkalescent, stimulant and savoury but on a low scale as to quantity,—the drinks alkalized, purging tincture of aloes and myrrh as an occasional purgative, chalybeates, viz. salt of steel with myrrh and soda, camphire—in small doses and at short intervals, with occasional emetics, particularly emetics of white vitriol, compose the routine of medical prescriptions. By these, or other better contrived means, employed in combination, something may be done, even more than can be done in the case immediately preceding. The principal business is here to add: in the other, something must be removed before addition can be made; and to take away and to add, and to preserve the fabric from radical change and ruin, is physically and morally the most difficult task that man

CHAP. II.

undertakes. But even where the view is simple, as it comparatively is in the present case, the attainment of the object will be difficult with all the aids of human skill and human means; with the circumscribed means of the medical officers of armies, it is next to impossible. Circumstanced as the military medical officer ordinarily is, he can rarely do more than exercise patience, and bestow on the subjects of his care the attentions of humanity.

SECTION III.

Febrile Action in the Catarrhal Form.

The cause of fever sometimes manifests its operation upon the membrane which lines the nose, fauces and bronchia, constituting catarrhal fever which comes, in this manner, to be ranked among the diseases of the thoracic cavity. The symptoms of this form of disease are so commonly known that it would be superfluous to go into detail of history on the present occasion; and, as historical detail is superfluous, I shall only add a very short notice on what relates to cure.—The catarrhal form of fever often begins with more or less of shivering, and it is very frequently accompanied by symptoms of fever to considerable extent.

Cure.

In regard to cure, if the head-ache be severe, the cough sharp and distressing, the rheum from the head and bronchia sharp and thin, particularly if withheld under constriction, it is advisable to

abstract blood, viz. from one to two pounds, or in fact to such quantity that the secretory organs relax, and the condition of the pulse change. When this has been done, and when the tension and the heat have been removed in consequence, an emetic of ipecacuanha, but still more certainly and effectively an emetic of white vitriol cuts off the disease in its beginning—in most cases where it is properly administered.—Two scruples, or one drachm of flowers of sulphur with twenty grains of nitre, made into a bolus with pure honey and given at bed time for three or four successive nights, is generally sufficient to prevent any recurrence of the disease, more particularly if the diet be diminished, if the subject take exercise in the open air and carefully avoid exposure to cold and damp during the night. The effect is more certain if solution of zinc and alum be given at intervals during the day.

If the symptoms still continue, notwithstanding the employment of the means now stated, it may be proper to immerse the body in a bath of warm water, to abstract blood from the arm in such quantity as may produce a sensible change, to repeat the emetic, to apply blisters between the shoulders; and if the cough be troublesome, the defluxions of phlegm copious and tough, white vitriol and alum in large doses, or sulphur and honey with a certain portion of balsam of capivi made into bolus has often, within my own experience, produced very favourable effect upon the disease.

CHAPTER III.

Forms of Febrile Action in the Superior or Cranial Cavity.

CHAP. III.

THE endemic cause of fever manifests action not unfrequently upon the membranes and substance of the brain more prominently than upon other parts of the body, constituting a form of disease which I have taken the liberty to call cerebral fever. It is perhaps the most important of any of the forms that occur in the animal system on account of its dangers —and it is one of the most difficult to be justly discriminated on account of the obscurity of its conditions.

Modes of Cerebral Fever.

It is simple, as it acts on one series of parts and as the action continues on the same series throughout. It is compound, as it acts at the same time upon parts of different series or structure, or as it changes from one series to another at a certain period of its course. The act is progressive, as it produces through the operation of the diseased movement something that is new and foreign: it is constric-

tive or spasmodic, as it suspends the functions of secretion through irritation and influence of force; it is stationary, or stagnant in default of moving influence in whatever manner that influence may be withdrawn; and it is retrograde or liquescent, as it tends to disorganize or dissolve the continuity of living structures. The cerebral fever, as occurring in the sanguine temperament and acting on the sanguine base, is characterized by vascular action locally excited to intensity, or suspended through excess by plethoric oppression; as occurring in the phlegmatic temperament and acting on the phlegmatic base, it is characterized, during its course, by torpor and defective animation in all the animal functions and by congestion as an effect; as occurring in the serous temperament and acting on the serous base, the character is diversified in a variety of ways, viz. constrictive, suspensive, irritative, or irregularly secretive: the termination is various—often by effusion.

History.

A. The cerebral form of fever connected with the sanguine temperament occurs frequently in dry and very hot weather, in barren, rocky and hilly districts of country, especially among natives of Europe or high latitudes soon after their arrival in the West-Indies, particularly among such as are intemperate in eating and drinking, and as are irregularly exposed to vicissitudes of heat and cold. It commences as fevers usually do with more or less of horror and shivering. The attack is sudden for the most part, and the symptoms are often severe from

CHAP. III.

the commencement. The pulse is ordinarily quick, hard, strong and frequent—the pulsation of the carotid and temporal arteries unduly excited—vibrating and irritated. The pain of the head is sometimes heavy and obscure, oftener severe and sharp, sometimes vehement and almost intolerable. The eye is red, hot and painful—often prominent or protruded. The face is flushed—often of a deep crimson. The tongue is generally dry; the thirst great; the urine red and scanty; the body bound—often costipated; the skin dry; heat preternaturally increased—often ardent. The disease is often fatal if it be left to itself, or feebly opposed by art; the duration rarely exceeds five or six days whether the termination be favourable or fatal. The favourable termination is sometimes effected, at least sometimes accompanied by copious hemorrhage from the nose, sometimes by copious perspiration or other copious contingent evacuation; the fatal termination by coma, convulsion or apoplexy.

DISSECTION.

The traces of morbid action, observable in the body after death, are of different kinds according to the nature of the base upon which the cause has principally acted. The vessels of the dura mater, and frequently the vessels of the superficial parts of the brain bear marks of what is termed inflammatory action. —They are numerous, distended with blood, sometimes through the whole superficies, sometimes par-

tially—most commonly near the falx. The surfaces are sometimes suppurative; and, in some instances, secretions of a fluid of an osseous nature, and even pieces of bone are found between the membranes: these are however rare occurrences. The blood vessels are numerous and for the most part distended with blood, even so much distended that, losing contractibly, they appear gorged so as to exhibit an appearance of gangrene at various points, more frequently near the falx and at the joining of the coronal with the sagittal suture than others. The vessels which run on the surface of the brain are, as already observed, turgid; the substance of the brain itself is often unusually firm as distended by an undue proportion of red blood—the cause of the distention indicated by the great number of red points which start up from the surface where the parts are divided by the knife. Water is sometimes found in the ventricles in greater than usual quantity, but not often where the dura mater and cortical part of the brain are the principal subjects of the diseased action. In the forms of cerebral fever which move in periods, and which act on the sanguine base, the vessels are often gorged with blood throughout; sometimes they are ruptured,—the brain oppressed generally or partially; blood, or bloody serum effused in greater or smaller quantity.

CURE.

The cure of all the progressive forms of cerebral fever moves on a common base, viz. arrest of the

CHAP. III.

diseased course by abstraction of blood, and subsequent excitement of a healthy form of action by various means of stimulation suited to the circumstances of the case. The quantity of blood which may be abstracted in this form of disease, without compromising the safety of the patient's life, exceeds a measure which, without experience of the fact well and clearly ascertained, I should not venture to put before the public. Four pounds abstracted at one time may be considered as moderate bleeding in the more concentrated forms; six have been abstracted on several occasions, and even seven in some. The practice, so formidable in appearance, implied no danger; it in fact saved life in the first instance by subverting the foundations of the disease, and, if the means subsequently applied were properly adjusted to the case, the return of the disease was effectually prevented.

It is evident to any person who observes, and who reflects on what he observes, that the cure of the form of cerebral fever now under view turns principally upon the abstraction of blood. The opinion is reasonable in theory: it is proved in experience to be founded in truth, and it is further proved that the manner in which the abstraction is made, independently of the quantity abstracted, contributes materially to the success of the effect. Where the force of the morbid action is principally directed to the exterior membrane and superficies of the brain—a condition cognizable by the attendant symptoms, abstraction of blood from the temporal artery has more

effect than abstraction from the veins in the common manner; in so much that the quantity of two pounds, obtained suddenly from the arteries at the temples, produces on most occasions an impression equal to four, drawn in the common manner from a vein in the arm. But, whether blood be drawn from the arteries or the veins, it is to be drawn by a large orifice and in as short time as possible.—The quantity is moreover to be measured by the effect which arises under the act of subtraction—not by opinion formed under a presumption of what may be right. It is seldom that the end in view is attained by less than three pounds of blood drawn from the veins at one time. Six may be necessary on some occasions; but, as already observed, whatever be the quantity, it is the effect produced which constitutes the rule for judging the measure. The measure may be extended to seven, perhaps even farther without compromising the patient's safety. It has amounted to ten in some few instances within twenty-four hours; and, instead of danger at the time, or debility as a consequence of such loss, fainting has not been observed—and the patient has even returned to his duty, within eight days, in the full vigour of health. But as it is effect which, according to the doctrine of this sketch, judges the measure, so the combination of other means with abstraction, viz. immersion of the feet and legs in a tub of warm water while the blood flows from the vein, followed by affusion of cold water on the head as soon as the first remission of the symptoms is perceived, contribute materially to

CHAP. III.

reduction of the otherwise necessary quantity. The disease is arrested with an almost calculable certainty by the means stated, if they be timously applied and efficiently administered; but, though arrested, the chances of recurrence still exist and threaten, and, with a view to preclude such chances, the whole of the head is to be covered with blisters even down the neck; purgatives, viz. purging salts with a certain proportion of emetic tartar; or thirty grains of jalap, with five or six of James' powder, are to be given immediately after the arm is bound up, the operation assisted by plentiful dilution with rice water, barley water, or other agreeable and diluent beverage, in which nitre is dissolved in large quantity, the head being raised high while the patient reposes in bed, and the air of the apartment being rendered as cool and refreshing as it can be rendered in a tropical climate. If, after the lapse of twelve hours, and after free evacuation of the bowels and full action of the blisters, any remains of pain or uneasiness be still felt, the vein is to be again opened, and, under the flowing of the blood, the feet being immersed in a tub of warm water, cold water, even water artificially cooled, is to be poured copiously upon the head notwithstanding the irritated condition of the scalp from the recent application of the blister:—the disease is dangerous and its dangers cannot be averted by feeble measures.

CHAP. III.

Phlegmatic.

B. The cerebral form of fever which occurs under the predominance of the phlegmatic temperament is more frequent than the preceding; and it is even more important, in as much as it is not less dangerous in its tendencies, and as its dangers are not so easily seen. It may be considered as the endemic of the island of Barbados, among the military who form the garrison of that station.—The island of Barbados lies in the 13th degree of north latitude. The heat is moderate as the heat of a tropical climate: it very seldom rises higher than 88 degrees of Farenheit's thermometer; it ordinarily ranges between 76 and 82. The mass or body of the island consists of soft rock-like marl,—the flat surfaces covered with a black mould of different depth—from six inches to eighteen. Numerous small ponds of water—mostly artificial ponds for cattle, are dispersed over the face of the country; but there are very few swamps, and scarcely any foul or uncultivated ground in any part. The air of Barbados is upon the whole dry; the breeze, from the sea, strong during the day; the winds, from the north quarter, sharp and disagreeable during the night, especially to those who are overheated and carelesly exposed to them. Intermittent, or common ague and fever does not rank among the diseases of this island; the gastric or bilious remittent is frequent in the autumnal months; the dysenteric appears at all seasons, and it often appears as an epidemic; but, of distinct febrile forms, the cerebral is most common and, in the drier months of the

CHAP. III.

year, it in a manner absorbs all others. In the course of three years, viz. from the year 1812 to 1815, the number of cases of this form of disease which passed through the hospitals furnished ample materials for history, but the limits of the present work do not permit a full detail.—I shall consider the disease under two views, viz. mild and aggravated. The milder form, in as much as it is without urgent symptoms, is for the most part opposed only by feeble means, and it is thus ordinarily of protracted duration; the aggravated form, unless treated with decision at the commencement, is speedily fatal.

History.

1. The cerebral fever of the milder form comes on with more or less of cold and chilliness. The chilliness is succeeded by heat, but of no great intensity. The symptoms increase gradually from a mild beginning to the seventh day—intermixed with risings and fallings at given periods, but rarely with such marked aggravation or abatement as deserves or obtains the name of paroxysm and remission. The febrile commotion ordinarily ceases or subsides about the seventh day,—and health returns by slow degrees. Sometimes, instead of ceasing, it only changes form and proceeds through another septenary period, sometimes progressive, sometimes retrograde, but still on what may be termed the humoural base. In many instances, it changes form and changes base, the act being transferred almost entirely from the circulating to the sentient organ—intellectual or locomotive.

The more characteristic symptoms of the early stage, that is, the stage comprehending the first septenary period may be referred to a dry skin—pale and deficiently animated; a pale and inexpressive countenance; a pale and dry lip; a tongue frequently red and for the most part clean, at least not foul and incrusted as the tongue usually is in fevers of a common character. Thirst is sometimes great; nausea is not unusual,—and it is often of a peculiar kind, viz. a desire to vomit without power to effect vomiting. Vomiting, at least severe vomiting with retching, is rare, and, where actual vomiting does take place, it is rarely bilious. Delirious wanderings are not unusual: defective power of recollection is noticeable in most, and, in many, there is total want of sleep almost during the whole period of the duration of the disease. These, viz. nausea of a peculiar kind, a dry and pale lip, a clean tongue, increased thirst, a pulse sluggish and inexpansive, constitute the more constant and striking symptoms of the milder form of this disease during its first septenary period.

Second Course.

If the disease terminate favourably about the seventh day, the healthy action commences, but the progress of recovery is for the most part slow and gradual. On the contrary if, instead of crisis and favourable termination, there be only change of mode, a new form of disease commences and advances with more or less regularity to its own termination. The symptoms are various; sometimes, actively progressive, they move under a form of

CHAP. III.

excited action and terminate by a regular and final crisis; sometimes, stagnant, they strike into the retrograde channel, and life terminates under symptoms of general or local inability. The skin in the last case withers, or becomes damp, clammy and greasy,—there is want of ability to move rather than that species of extreme mobility which does not bear to be moved without fainting, or near approach to it. The mind is without energy or command: delirium, ordinarily so named, is rare: the pulse is small, frequent and obscure,—sometimes soft, weak, regular and very easily compressed.

2. The commencement of the concentrated form of cerebral fever is similar to that of the mild; except that the attack is often more sudden and abrupt, as well as that the symptoms are more violent in degree. Vertigo, blindness, nausea and vomiting are among the first symptoms. The nausea is of a peculiar kind, often accompanied with giddiness and unusual sensations in the head. Vomiting, where actual vomiting takes place, is seldom bilious. Coldness—deep and dead coldness of long continuance is common; shivering and shaking are rare. There is generally more or less of confused feeling within the head: pain is sometimes dull and oppressive—with stupor and inaptitude; it is sometimes intolerable—driving the patient almost to madness; but it is rare that pain continues in excess after the tumult of invasion is past. The eye is heavy, torpid, fixed and inexpressive; or expressive of irksomeness and discomfort. It sometimes

rolls wildly, particularly where delirium is a prominent symptom. The *tunica conjunctiva*, instead of being suffused with red veins, is unusually white and pearly,—sometimes lurid—without lustre. The general appearance is dull and inanimate, vacant or idiot-like,—a condition which increases for the most part as the disease advances towards its termination. The countenance is usually pale, sometimes greasy and lurid, almost always torpid and heavy—statue-like without expression. The lips are often pale, and, for the most part, unusually dry: thirst is great—constant,—not satiated by drinking, often accompanied with smacking of the lips. The tongue is often red, rarely foul. The skin is dry, thick and torpid, sometimes greasy and damp—defectively animated. The pulse is generally of febrile frequency, but seldom accelerated in any remarkable degree as a febrile pulse: the stroke of the artery is not quick and energetic; it is, on the contrary, drawling, sluggish and without expansion. The heat of the body is rarely high; sometimes it is considerably increased at the *præcordia;* it is seldom higher than natural on the extremities. Delirium, as already observed, is sometimes outrageous at the commencement, but such delirium is only a temporary fury: the derangement of intellect more commonly termed delirium is not common or striking, as a symptom in the progress of this disease. But, though delirium properly so called be a rare occurrence, the evidences of want of energy of mind are conspicu-

CHAP. III.

ous—such as give reason to believe that, though the ideas be not actually perverted, they are disturbed and as it were hampered in their course by some adventitious cause of compression. Nausea is present in almost all stages of the disease; even vomiting occurs occasionally. The nausea is peculiar—different from common nausea and such as words cannot well describe:—where vomiting takes place, the matters ejected are rarely any other than what have been taken down as drink. The body is costive; the intestines torpid—scarcely moved by the strongest purgatives; or, if moved, not effectually evacuated:—this obstinacy of the bowels to the action of purgatives is in fact one of the most striking features of the disease. The urinary secretion is often scanty, sometimes in a manner suspended. Anxiety, distress and sufferings of pain are rare occurrences. Inability and want of power are conspicuous in all the animal actions; but fainting, disposition to faint, or excess of mobility is rarely observed. The patient lies on his back, for the most part, in a state of tranquillity,—sometimes still as if he were inanimate. Respiration is ordinarily slow, sometimes preternaturally slow and unusually calm. It is not easy to form a precise opinion on the subject of sleep: there is often the appearance of slumber, rarely the reality of sleep. Wandering of intellect or confusion of idea is not unusual for some time previous to death; but delirium even then is rare as a mode of febrile action.

CHAP. III.

The symptoms, now enumerated, are not all the symptoms which characterize this form of disease; but they are the most common. On some occasions, tumults in the sentient system, both externally and internally, are conspicuous, viz. spasms, cramps, tetanus, convulsion,—and delirium of all forms and degrees. The course of the disease is, upon the whole, rapid. The termination, when fatal, rarely extends beyond the seventh day: it often reaches to the fifth, unless among the periodic forms, where convulsions supervene at an early period and sometimes close the scene abruptly.

DISSECTION.

The dura mater rarely shows appearances of what is termed inflammatory action, or it only shows it partially near the falx. The arachnoid coat and pia mater are on the contrary almost always more or less inflamed: the pia mater has in fact the appearance, on many occasions, of a linen rag that has been dipped in blood, more especially its interior surface. Filaments of coagulated lymph extend in all directions from the interior membranes, so as to form adhesions with all the contiguous parts. The choroid plexus is usually a clotted mass, in which the traces of organization are scarcely to be discerned,—sometimes it is clustered with hydatids. The ventricles are almost always filled with clear water—often greatly distended by it; and, besides distention of the ventricles with watery fluid, water frequently

CHAP. III.

occupies the interstices between the coats of the spinal marrow. The substance of the brain itself, where the disease is of a rapid course, is generally more firm and solid than natural, giving an idea of artificial agglutination by coagulated lymph. The veins on the surface of the brain are distended with black blood, and black blood often trickles out in quantity from the more solid substance as it is cut into slices by the dissecting knife.—Nausea, as already observed, is almost always a symptom of this form of disease: dissection of the dead body almost always shows spotted or gangrenous appearances at the cardiac orifice of the stomach.

CURE.

The method of cure rests on one basis in both forms—mild or concentrated; the measure of the means is that only which requires to be varied. The concentrated is the case at present under view; for if the treatment of the concentrated be rightly understood, the management of the milder can scarcely be mistaken. I merely give the outline of the proceeding:—If a person, whose condition manifests signs of the concentrated form of cerebral fever acting on the phlegmatic temperament, be submitted to medical care at an early period, that is, within twelve hours from the time of attack, the first step in the curative process consists, according to my view of the case, in immersion of the body in a warm bath of rather high temperature, its activity increased

Early Period.

by the addition of ammonia, or *eau de Cologne*. After immersion for eight or ten minutes, a vein is to be opened in one or in both arms; or, the internal jugular is to be opened in preference if it can be done conveniently. When the vein is opened, the blood is to be allowed to flow until a decided change be perceived in the circumstances of the disease; that is, until the blood change to a brighter colour, until the pulse become open, free and expanded—the stroke quick and energetic,—or until fainting supervene. If fainting supervene, or if strong indications of fainting manifest themselves, the patient is to be removed from the bathing vessel, placed upon a couch—the head somewhat elevated, wiped dry, the face and breast sprinkled with cold water, aromatic spirits, vinegar and water, or other means suitable to be employed for forwarding recovery from the fainting state. When the disposition to faint is perfectly removed, the condition of the patient is to be re-examined with accuracy; and, if it then appear that the foundations of the disease are still unmoved, the vein is to be again opened, the blood allowed to flow, or solicited to flow until the change desired be perfectly effected. When evidence of that change is satisfactorily established, blisters are to be applied to the temples and to the nape of the neck, infusion of senna with a proportion of prepared kali and acetated water of ammonia; or jalap, with calomel and James' powder, is to be given as a purgative, the operation forwarded by copious dilution with alkalized beverage.—Large doses of

CHAP. III.

acetated water of ammonia, muriate of ammonia, nitre, camphire and frictions of the body with hot olive oil and ammonia rank among accessory assistances in the case described.

If the view, the outline of which is here sketched, be executed diligently and under a full comprehension of the principle which gives effect to the medical act, a calculation may be made with some confidence on the safety of the patient's life, provided the case be submitted to treatment at an early period. But if the progress be advanced, though the basis of the proceeding continue such as has been stated, the circumstances of the condition are different and require more or less of modified application,—and, even with all the care and attention that can be given to application, no promise can be confidently made of good effect. The basis of cure consists, according to my own opinion, in abstracting blood from the veins to the greatest possible extent, even at late stages; in stimulating generally and locally, after the abstraction and under it, by infusing heat into the system through various external and internal means; and finally, by attenuating the mass of the circulating fluid by means of diffusible, alkalescent and diluent drinks; for, in so far as opinion can be formed from the appearances that present on dissection, the immediate cause of death depends in the more pure and concentrated form on agglutination of the brain by effusion of coagulated lymph, similar to the agglutinations which sometimes take place in the lungs

Advanced Period.

and render that organ unfit for the purposes of respiration. CHAP. III.

C. Besides the forms of cerebral fever which occur under the predominance of the sanguine or phlegmatic temperaments, a febrile disease with marks of prominent action on the membranes or substance of the brain, the action principally manifested on on the serous system of vessels, presents itself to observation on numerous occasions, more particularly in fevers of infectious origin, or in such, as acting primarily on the gastric region, suffer transfer to the cerebral at a late period of the course. The commencement of this form of fever is not distinguished by any peculiar characteristic. It begins generally with more or less of chilliness followed by heat; the heat is ordinarily sharp and caustic in kind; the pulse is frequent—often small, and generally quick; the pain of the head is frequently severe, sharp or irksome. The skin is generally dry—often harsh; the tongue is rough in most cases, and usually dry; thirst is great, sometimes excessive with smacking of the lips; nausea is common; vomiting is not rare; the body is costive,—the bowels sometimes obstinately locked as in colic; sometimes they are loose, the stools watery, but ineffectual of relief; the urinary secretion is irregular,—sometimes in a manner suppressed. Sleep, where it does occur, is rarely sound; it is often altogether wanting for several days; delirium is not unusual; it is of various kinds and degrees—sometimes considerably excited.

Serous Temperament.

History.

CHAP. III.

The disease, formed on the base now given, proceeds for five days, or for seven with risings and fallings of more or less distinctness at diurnal periods, but seldom so distinct as to deserve the name of paroxysm and remission. About the fifth day, oftener about the seventh, signs of favourable crisis, or the beginnings of fatal subsidence become manifest. The eye and countenance often become dingy in the process of the disease, even more or less yellow; the skin sometimes continues dry, hot and parched throughout; sometimes it becomes damp, cool and greasy towards the latter periods: the mind is usually irritable, exclusive of mental alienation or delirium. Instead of the torpor, which in a manner characterizes the preceding, anxiety and restlessness are often considerable in the present form; and in the latter period, though there be seldom any signs of mobility or disposition to faint with changes of posture, there is often inability or want of power to effect any—the slightest voluntary movement of the body.

The disease proceeds and, as already observed, sometimes terminates finally or completes its circle about the seventh day; it sometimes only subsides temporarily at that period, recurs in a new form, and often on a new base, viz. retrograde, on the seventh or eighth. It proceeds in its new course with more or less variety, terminates favourably or fatally about the fourteenth day; or, changing form it proceeds through another, or even through several septenary periods, with uncertain final issue—frequently with

fortunate one. Death is sometimes sudden, viz. by convulsion or coma; sometimes gradual—by sinking and by loss of power:—the habit shrinks and withers, or melts down by colliquation.

DISSECTION.

The substance of the brain is sometimes unusually dry, its vessels constricted and its customary secretions in a manner suspended: the cortical part, while dry, often has an appearance as if it were withered—sometimes flaccid and sometimes soft or melted down; the ventricles in such case are dry, the interior membranes shrivelled. In other cases, the substance of the brain is moist and turgescent, serum of a dirty yellow colour being frequently effused in the ventricles, under the membranes at the base of the brain and between the coats of the spinal marrow:—where the quantity of the serum effused is considerable, shreds of coagulated albumen are often seen floating in it.

CURE.

The cure rests here on the same base as in the preceding, the modifications are different, and the power of remedy is of more dependence. If means be applied in time, and if they be judiciously directed, the medical art has power so as often to effect a favourable termination. The temperature of the warm bath, instead of being high as in the pre-

CHAP. III.

ceding, may be considered as sufficiently high at 94 of Fahrenheit's thermometer. Abstraction of blood is here, as in the others, the cardinal remedy. Fainting occurs more readily than in subjects of the phlegmatic temperament, and on this account the whole quantity of blood, that may be necessary for the cure, can seldom be taken at one time. The good effects of emetics, of diaphoretics, and even of blisters as acting more impressively on the system of serous secretions, are more conspicuous than in the preceding: opiates appear also to be of more benefit. They tend not only to allay irritations, but to relax the constrictions, which suppress the usual secretions and constitute the main feature of the disease.

Sentient System.

D. Besides the preceding forms of cerebral fever, the leading action of which is manifested in the circulating system, whether on the sanguine, phlegmatic or serous base of temperament, there sometimes occur febrile, or unusual commotions in the sentient system, arising from the influence of a febrile cause and often destructive of life, but which leave behind them only very obscure, and sometimes no perceptible traces of morbid action on the structure of the dead body. It happens sometimes, but not often, that the primary action of a febrile cause is exerted exclusively on the functions of the sentient system—animal or intellectual; it happens often that the action is transferred, at later periods, from the more usual channels of febrile action to the directly sentient organ. This is not uncommon in

History.

gastric forms, and it is still more usual in the infectious.—Where the action of the disease is transferred to the sentient system exclusively, the vascular commotion ceases, or diminishes, the pulses of the heart and arteries sometimes return to the natural condition, viz. calm, regular and slow; sometimes they continue accelerated, even preternaturally irritated and irregular—small and inexpansive. The heat is often natural; sometimes it is below the standard of health; the tongue is often clean; the thirst moderate; the appetite for food, in many cases, like the appetite of a healthy person; the function of the bowels and the secretion of urine are often without fault. The whole force of the morbid cause is here exerted on the function of intellect, sometimes by excitement resembling insanity, sometimes by depression, despondence, or melancholy. The derangement sometimes continues for days; sometimes it declines after a few hours, but returns after an interval as if it depended on the action of a periodic cause. It sometimes terminates favourably, sometimes fatally. The favourable termination is marked —sometimes by cessation simply, sometimes by quiet and sound sleep; the fatal termination—sometimes by convulsion, sometimes by silent death—without tumult. Besides the transfer of morbid action to the intellectual function now alluded to, the instruments of locomotion are sometimes affected, almost exclusively of the other organs of the system. In this manner, there are tremors, startings, spasms, and even convulsions; in others, extreme weakness, in-

CHAP. III.

ability to move, or to bear to be moved without fainting, or disposition to faint:—this occurs without marks of other febrile action—either periodic or continual.

DISSECTION.

The traces of morbid action observable in dissection of the dead body are, for the most part, very obscure in such cases as show prominent action in the intellectual organ only, the cause of death, though not independent of derangement in organic structure, being then of such a subtle nature as rarely to leave visible marks of its impressions.

CURE.

The cure of this form of febrile action, like the cure of all other febrile diseases, depends upon the just application of forcible impressions which arrest the existing action, followed by suitable means which excite actions which are analogous with those of health. Such changes are, or may be effected sometimes by acting through the medium of the circulating system. They are oftener attempted to be made through means which make direct impression on the moving power, particularly by the alternate and sudden application of warm and cold water by affusion or immersion. They are sometimes also effected by opium and by wine, so administered and so measured as to impress their own action—in force sufficient to supersede the action of the existing

disease. Warm fomentations and frictions with oil soothe and allay irritations; and blisters, by exciting counter irritation, often act beneficially in this form of disease. These are useful, and on many occasions have decided beneficial effects; but ten or twelve grains of pure and recent cob-web, I think I may venture to affirm without fear of contradiction, may be regarded as the most effectual of all known means for allaying irritations, whether corporeal or mental, that we at present possess. Its power is far beyond that of opium;—and it is valuable as it does not disguise the circumstances of the case.

Periodic Form.

E. Besides the forms of cerebral fever described in the preceding pages—and which are of the continued class, cerebral fever appears not unfrequently in periodic form,—most commonly in forms of the single tertian type. This occurs frequently in the phlegmatic temperament; it occurs also in the gangrenous under influence of the gangrenous constitution—epidemic or artificial. The invasion is usually sudden; the characteristic symptoms consist in giddiness, tremors, agitations, delirium—violent, even to fury. The pulse is ordinarily irregular, irritated—frequent, or slow according to circumstances; the countenance is sometimes flushed, sometimes pale; the eye is prominent or sunk,—agitated and wild, or hollow and ghastly. The violence now alluded to subsides: the powers develop in a given time, generally in twelve or fourteen hours; but tremors, wildness or depression of countenance, and such other signs as give suspicion of the treachery of the

History.

CHAP. III.

disease are still cognizable on close inspection. At a certain period, generally sooner than the regular hour of the type, the above described symptoms return—sometimes of aggravated force, sometimes of nearly the original intensity. They sometimes pass rapidly into convulsion, followed by stupor and ordinarily by death; sometimes they preserve the original form, and, after a certain duration, subside in another imperfect or suspicious intermission. The paroxysm recurs again, often before the time expected according to the regular progress of the type. It sometimes passes rapidly into convulsion, which frequently terminates in death; sometimes the convulsion subsides, and life is saved. The fatal termination sometimes occurs in the second paroxysm or third day; often on the third paroxysm and fifth day,—and sometimes not for ten days or a fortnight. Any one may conjecture, but no one can pretend to calculate the event: it is not precisely within the rules of organic action.

The form, now described, is a form of violence strongly disposed to pass into convulsion, and to terminate in death; but besides this, a form of fever frequently occurs where delirium or derangement of intellect is the prominent symptom throughout, sometimes excitement and various forms of aberration analogous to insanity, sometimes depression, despondence, even stupors which invade and recede at certain periods, and which, when they finally disappear, leave the patient free from disease, except with sensations of unusual debility.

CHAP. III.

DISSECTION.

The brain is the organ on which the force of the disease is principally exerted; but the traces of its action are not always visible on the organic structure of the part. In the more violent cases, under a malignant or gangrenous constitution—epidemic or artificial, particularly where the scene is closed by an apparent fit of apoplexy, congestions of blood are visible in the whole of the venous system within the head, more especially in the sinous veins. Sometimes, besides general turgidness and distention, blood effused from rupture of vessels covers the surface of the whole, or of part of the brain. In the phlegmatic habit, instead of turgidness and stagnation of red blood, there is often effusion of water to great extent in the ventricles, at the base of the brain, even between the coats of the spinal marrow: marks of inflammation—adhesive or suppurative are rarely visible. In the serous temperament, coloured serum is effused in great quantity; sometimes nothing is observed. It is rare that traces of derangement are discovered in the structure of parts where the intellectual function has been disordered without violence, or uncommon agitation approaching to convulsion; or, if such do occur, they are contingent, viz. the effect of contingent change in the circumstances of the morbid action.

CHAP. III.

CURE.

The means to be employed, for the cure of the fevers just now described, are such as moderate, or arrest the course of the violent actions which threaten danger to organic structure, or which act preventatively of the recurrence of pernicious actions which have been previously arrested. It is recommended that, in the two first of the violent conditions alluded to, whether malignant gangrenous, or malignant phlegmatic, the head be shaved as soon as the patient is submitted to medical care, that the body be immersed in a warm bath of higher or lower temperature according to relative circumstances, that a vein be opened in the arm and blood allowed to flow, or encouraged to flow until a visible change be produced in the conditions of the disease, viz. until the violent irritations be moderated or overcome, or until torpor and oppression diminish or disappear. The opening of the jugular vein or the temporal artery is preferable to the opening of a vein in the arm on many occasions; but it cannot always be done without great trouble and inconvenience, it is not therefore ordinarily resorted to. When signs of a commencing change become visible, cold water is to be poured upon the head while blood still flows from the vein; and, when the change contemplated is effected, the arm is to be bound up, the patient being allowed to remain for half an hour or more in the bath.

CHAP. III.

When rendered calm and manageable by the proceeding now stated, removed from the bath, disposed in bed, rubbed dry, the head covered with a blister extending down the neck to the interval between the shoulders,—a purgative, viz. jalap with calomel and James' powder, or infusion of senna with tartarized antimony, is to be given immediately, its operation forwarded by plentiful dilution with alkalized beverage and large doses of acetated water of ammonia. Nitre, camphire, occasionally ammonia and even opium may be given at intervals, with acetated water of ammonia, or James' powder—in quantity sufficient to maintain activity of circulation in the extreme surface, and more particularly to excite the energy of the functionary office of the brain. When irritation and violent action have been moderated or arrested by the above or other more suitable means of remedy, the great point of cure turns upon the prevention of recurrence,—a purpose more commonly intrusted to Peruvian bark than any other. Two ounces of bark, one ounce of powder of valerian, half an ounce of flowers of sulphur, with two drachms of salt of wormwood and four grains of emetic tartar, formed into an electuary and given to the quantity of two drachms every two hours during the interval, with blisters applied to the wrists about six or seven hours before the paroxysm is expected to return, have appeared, in my own experience, to be one of the most effectual of the means of prevention that have been employed. But if notwithstanding the

CHAP. III.

power of the electuary, there still exist signs of despondence, or disposition to tremor, an opiate, or wine in quantity, so as to induce a certain degree of artificial impression, is principal among remedies—and may be administered with advantage: immersion in the warm bath, at the first feeling of indisposition, is also another which promises additional security against an unfavourable event. If the symptoms be violent, a vein is to be opened in the arm and blood abstracted, while the body is under immersion, to such quantity as may be deemed safe and useful. The impression to be made in this case must evidently be a strong one. Where irritation is violent, opium may be given to great extent with safety—the tincture of opium to one hundred or one hundred and fifty drops.—The main object of cure centres in averting the force of the disease from the head by external irritation, or other form of diversion, and by rendering the sensitive organ little sensible to its impression,—a purpose effected artificially by exciting actions of a nature opposite to those of the disease. Where the morbid action is chiefly manifested on the intellectual function, the dangers, though apparently threatening, are comparatively small. Opium, and, still more decidedly, a bolus of twelve or fourteen grains of pure cobweb is sovereign.

Cerebral Fever—Mode retrograde.

E. Cerebral fever, under forms of progressive action, are different in kind. The symptoms intermix, or change occasionally and thus appear different; the cure is notwithstanding under one general

law of management. The fatal tendencies may generally be averted with a considerable degree of certainty, if remedy be applied at an early period, that is before organic structure be actually violated. The cure of the retrograde is less under the command of the medical art. It is a form of disease which occurs sometimes in malignant constitutions of atmosphere from a cause that is inscrutable; or, it occurs in impure air artificially corrupted by accumulation of human beings in unwholesome quarters, more particularly among sick persons who are crowded together in damp and ill ventilated hospitals. It is thus a common and fatal form of relapse of infectious or other fevers in military hospitals,—even so fatal as to produce, on many occasions, an appalling mortality. If the cause of the disease act on the sanguine base, the countenance is usually dark and grim as in some forms of sea scurvy; if, on the serous, it is usually dry and withered as the leaf of a vegetable that is touched by frost or blight. The former is more common in the periodic; the latter in the continued, and particularly in such as depend on a cause of infection.

DISSECTION.

The more striking appearances, observed in the dead body of the first, consist in black uncoagulated blood, stagnated in the sinuses and larger veins within the cavity of the cranium; in the second, in a dry, withered, flaccid and inelastic state of the brain itself.

CHAP. III.

CURE.

The cure of the retrograde form of cerebral fever is more difficult than that of the progressive. It consists in all its latitude of a double process, viz. abstraction of blood from the veins, and, under abstraction, suitable stimulation of the moving power—such as is calculated to excite the natural or healthy action. In the progressive form of action, blood might be drawn with safety to a prodigious extent, and healthy action then sometimes arose after abstraction without the necessity of artificial stimulation. Here blood cannot be safely abstracted from the system, except in small quantity at one time, and stimulation cannot be applied, except in a measured degree and with attentive consideration of the existing condition. It is difficult, or rather impossible to deliver precise rules of management on this head. The cure can only be conducted properly by a person who thoroughly comprehends the principle, and who superintends every step of the process with his own eye. Of the means which stimulate to new action, after the condition of the organ has been acted on by the abstraction of blood, sprinkling of the body with cold water, gestation in a convenient vehicle in the open air, and internal cordials of small power are safe;—they are often effectual in giving impulse to progressive movement. When the progressive act has been excited, and when it has made some advances in progress, its steps will be accelera-

ted, and the effect rendered more sure by farther abstraction of blood, by aspersions of cold water and more active modes of gestation than were warrantable in the first trial. The whole of the proceeding is difficult, the management delicate, and only safely conducted under the direct inspection of the physician himself. The change contemplated consists in change to the progressive form of action; and, as that can only be moved by causes which stimulate, solicit and agitate, so it only can be maintained effectively, by the application of such causes as give exercise to the natural action of those parts on which the functions of health depend.

The cases which are given in this place, as illustrative of the history of the disease and the mode of cure, are selected from such as terminated fatally: it is from such only that an idea can be formed of the ravages which diseased action commits on organic structure. From the subjoined histories, the reader will learn that the means employed, though apparently strong means, were not strong enough, were not employed soon enough, or not employed with the combinations which were necessary to maintain the effect which was temporarily gained. They failed, as applied to a disease not remediable at the time; they were not properly measured to the strength of the case; or, they were not supported by means which assured the ground which had been gained by the first steps of the process. The effect was thus void through fault in the execution: the truth of the principle is not invalidated by the failure; it is on the contrary proved by the lights gained from dissection.

CASE I.

July 26th, 1814.—E——n, York Rangers, admitted into hospital on the 23rd of July, attacked the preceding evening

CHAP. III.

with slight cold and shivering. There was no violent symptom of disease:—no material head-ache or vomiting. A sense of dulness and inability, irksome sensations of pain in the limbs, with a lurid aspect, were the most conspicuous symptoms:—the pulse was defective in energy—and not accelerated in any remarkable degree. Evening,—he vomits every thing he takes, and throws up more than he takes down; the skin is dry—somewhat yellow or dingy—not hot; the pulse is frequent—small without expansion; the eye dull,—the white marcid or dusky; no decided pain of the head,—a sense of dull oppression; the bowels torpid. Purgatives, bath, blisters and diaphoretics constituted the chief prescriptions:—no blood abstracted, the case having been considered a slight one. July 27th,—he slept a little; the vomiting is somewhat abated; the pulse is less frequent—not expansive; the lips are dry; the skin constricted; no marked head-ache; dingy yellowness the same: bowels opened by purging tincture of aloes and myrrh: camph., ammon., opium in bolus: friction with mercurial ointment. Evening,—not worse; skin soft; pulse regular—not weak; little vomiting; eye muddy. July 28th,—not better:—free from pain. Evening,—pulse feeble and irregular; skin clammy and damp; lips dry; tongue moist; no pain; uncomfortable in himself; head not clear. July 29th,—he vomited much in the night,—had several evacuations by stool; the pulse small—hesitating, intermitting; yellowness increases; heat nearly natural. Evening,—the pulse is regular and rather firm; he has vomited two or three times since morning; the head is carried; he catches at flies as for amusement; the tongue dry. July 30th,—he wandered in the night,—now intelligent, so far as to answer a question, but not clear; the pulse is irregular at times, distinct at others; the countenance is lurid and yellow. Evening,—the head is carried; there is no vomiting; he takes nourishment,—at least arrow-root with wine. July 31st,—he died in the night: the body *opened*.—The dura mater shewed no signs of inflammation in its *open* surface; there were strong and extensive adhesions at the *falx* on both sides. The arachnoid coat and pia mater were infla-

med and thickened; the inner surface of the pia mater red as a shed of blood—with considerable effusion of coagulated lymph underneath: the ventricles and interstices between the lobes of the brain were deluged with water.

CASE II.

September 20th, 1814.—A——n, York Rangers, admitted into hospital to-day with symptoms of fever, chiefly characterized by numbedness and want of power of the limbs, want of sleep, &c. Bled to the extent of two pounds,—somewhat easier, skin open at the time; body opened by medicine. There is no marked pain of the head; no vomiting; thirst is considerable; the lips are dry; the pulse very frequent. September 21st,—the pulse slower, still febrile—small and inexpansive; the lips dry; the skin dry, thick and torpid; no complaint of pain; there is irksomeness and inability; little or no sleep. Evening, no complaint of pain; the lips dry; the skin constricted, or bedewed with perspiration—clammy and partial; no crisis, nor tendency to it. September 22nd,—watchfulness; tongue dry; lips dry; countenance inanimate. Evening,—not better; head blistered; bowels torpid; pulse very frequent and small; the skin warm; the lips dry; the tongue whitish; no sleep; the countenance unpleasant—giving no promise of safety. September 23rd,—he died in the morning: the body *opened*.—The blood vessels of the pia mater numerous and much distended,—lymph effused under it; adhesions and long filaments of coagulated lymph near the falx. Numerous red vessels upon the surface of the brain itself,—the surface frothy—its colour brown, the aspect unusual; a small piece of bone, attached to the pia mater, presented itself at the *crista galli*; numerous red points started out as the brain was divided by the dissecting knife; there was more than the usual quantity of water in the ventricles: the choroid plexus was knotty and of a purple colour. The liver was large and hard, as if it it had been boiled; in cutting into it, much blood—black like tar, flowed out: the bile in the gall bladder was black as tar: on the inside of the sto-

CHAP. III.

mach there were numerous patches,—black as if gangrened—without marks of preceding inflammation: the pancreas was diseased, adhering to the contiguous parts, and partially suppurated.

CASE III.

October 28th, 1814.—B——, York Rangers, had been unwell for two days, and went on guard yesterday morning with head-ache and considerable indisposition. He was a hard drinker, and in other respects a profligate man. He felt chilliness and severe head-ache, with other common symptoms of fever, about noon. He was relieved from guard and brought to the hospital about two o'clock. Bled to three pounds,—the head-ache relieved, not removed; the pulse continuing frequent, hard, and sharp. Evening,—bled to the amount of two pounds: pain of the head relieved; the pulse still frequent—not full, the stroke sharp; the skin hot and dry: no crisis, or sign of approaching crisis. October 29th,—slept in the night; sweated after the bath, but not freely; the pulse is still febrile, sharp—not expansive; the skin dry and rather hot; thirst moderate; no pain of the head; pain or uneasiness in the limbs, particularly from the knees downwards. Evening,—bled to the amount of twenty-four ounces: no feeling of pain; professes himself to be light and easy; the pulse still frequent; the heat natural; the skin dry, but not parched; the eye clear; the tongue whitish; thirst urgent; appetite wanting; bowels open; no crisis. October 30th,—slept a good deal; does not complain of pain; thirst diminished; tongue moist; pulse still febrile—the frequency diminished; the skin dry, but not constricted; heat about the natural standard. Evening,—some return of appetite; the tongue moist; pulse febrile, but open; skin moist; some appearances of recovery. October 31st,—says he is better, but the pulse is more frequent than it was yesterday; the skin is hot; the tongue foul; and he is reported to have raved a little in the night; the eye is now clear; he does not complain of pain or uneasiness. Evening,—vomited bile in the fore-

noon, after having taken salts; slept in the forenoon; eat soup and chicken with seeming relish; thirst not materially increased; the tongue moist—whitish, and not as the usual appearance of the tongue after fever; the pulse 120 in the minute—distinct and regular; no complaint of pain. November 1st,—very uneasy in the evening (viz. eight o'clock), pain of the head, hurried breathing, anxiety and distress. Bled to the amount of two pounds: antimony, nitre and digitalis: blister to the head. The skin now cool; the pulse still frequent, above 100 strokes in the minute—regular, but not expansive; the eye clear; the skin soft; respiration easy; the heat natural; the tongue white and rather dry: some sleep in the night; no complaint of pain. Evening,—an emetic was given in the forenoon, —some yellow bile ejected; lighter and easier; the skin cool,—no relaxation; the pulse frequent, but regular: took soup with relish. November 2nd,—rambled in the night; wanted to rise up; he is now sensible, but flies off at times; complains of general weakness and want of power; the abdomen inflated; tongue moist; thirst moderate; no vomiting; the eye and countenance less animated; the skin dry, but not parched; the lips dry; the pulse 120 in the minute—regular, but not expanded: —no indication of crisis. Evening,—two evacuations by stool; the abdomen less tense; the tongue moist; the pulse more expanded and less frequent; the mind not clear; the eye less animated; quivering in the muscles about the lips and nose; respiration hurried at times. November 3rd,—rambled during the fore part of the night, slept quietly in the latter; the pulse very frequent; the respiration hurried; cough at times troublesome; the pulse very frequent and small—in one arm not perceptible; torpor and want of energy in all the functions, particularly since yesterday. Evening,—died about noon: the body *opened*.—Marks of subsided inflammation in the brain; several protrusions from the brain into the skull, so as to penetrate to the outer table: strong adhesions and numerous cords of new formation at the falx, but of such appearance as if the inflammatory state had been past. Effusion of serum under the pia mater; the pia mater adhered in many places to the

CHAP. III.

substance of the brain; the blood vessels of the brain not turgid; water in the lateral ventricles (which were unusually large), in more than the natural quantity; much water at the base of the brain and about the *medulla oblongata*. The thoracic and abdominal viscera sound.

CASE IV.

November 14th, 1814.—C——n, York Rangers, had been absent from his quarter for one night, two or three days before he came upon the sick list:—he then acknowledged three days of previous indisposition. He complained of purging and griping, severe pain with bloody evacuations. Bled to the amount of three pounds: warm bath: calomel, opium and ipecacuanha every six hours. November 15th,—the pains relieved; five or six evacuations in the night; the stools mucous, watery—not feculent—without pain; the pulse very frequent and very small; the countenance of a greasy appearance—sunk and depressed; the tongue foul, rough and dry; thirst urgent. Evening,—purging somewhat abated; thirst continues; pulse very frequent, and so very small that there is difficulty in counting it; much nausea—apparently from the ipecacuanha which forms a part of his medicine; the skin is moist, but clammy; the countenance dull and unsatisfactory; says he is better. November 16th,—slept in the night, and reports himself to be better; the countenance somewhat more animated; the eye clear; the tongue rough and dry; thirst continues; purging diminished; no complaint of pain; the pulse remarkably small and frequent. Camphorated mixture, laudanum and æther; frictions with camphorated oil and spirits of turpentine to the abdomen and extremities: calomel, opium and ipecacuanha continued. Evening,—reports himself to be better; the tongue rather moist; the eye clear; the countenance rather more animated; the evacuations by stool bloody mucus,—some of them more than others; no pain or tenesmus; no anxiety or distress; tranquil; respiration easy; thirst continues; the pulse still very small and very frequent, but some-

what more distinct than it was last night; the skin warm—moist; the moisture not fluid; sleeps at intervals; takes nourishment, viz. soup, arrow-root, and porter, which he relishes more than wine. November 17th,—the eye less animated; the countenance more sunk; he still reports himself to be well, the only symptom of mental alienation that can be discovered in his words or actions; tongue rough; thirst very urgent; no sleep; has vomited several times; the evacuations by stool thin, without feculence,—sometimes the colour of milk chocolate; the pulse frequent and small—scarcely to be counted; the skin cold and clammy. Died at five in the morning: the body *opened*.—Adhesions at both sides of the falx remarkably strong and considerably extended: effusions of lymph under the pia mater; the pia mater itself much inflamed and thickened as an effect of inflammation; the brain studded with red points after the dissecting knife; a small quantity of water in the lateral ventricles; a prodigious quantity at the base of the brain;—the blood vessels of the lungs were turgid, though the substance was sound; the heart was small—coagulated lymph in the interior; the stomach not inflamed,—the inner coat of an azure colour—in some places more than others,—the colouring matter under the surface, not adhering to it; the liver was sound; the colon inflated,—the inner coat abraded in two or three places,—the abrasions not extensive: the small intestines of a dark colour, in one or two places tending to gangrene.

CASE V.

October 26th, 1814.—A——n, York Rangers, had been indisposed with head-ache, but bore up against it in hopes it would go off,—went on guard and was seized about noon with excessive pain of the head, giddiness and insensibility, loss of power of the limbs; brought to the hospital about two o'clock: the head-ache severe; the limbs powerless; sickness at stomach; thirst excessive. Bled to the amount of four pounds: head shaved and blistered: bathed in the warm bath: purging mixture. The pulse hard before he was bled; the blood flowed

CHAP. III.

freely,—no faintness or disposition to faint, and not much relief. Six in the evening,—the head-ache continues,—the pain chiefly in the forehead; the eye seems full—the coats not inflamed; powerless in his limbs; thirst great; tongue not foul; lips dry; skin dry; pulse frequent and irregular; one stool from the purging mixture: heat not above natural: blood buffy and cupped. October 27th,—no sleep; the skin dry and parched; several evacuations by stool in the course of the night; head-ache continues—chiefly at the forehead; pulse strong, hard and frequent—not full; heat above natural; thirst urgent; lips dry; tongue rather rough—not foul. Bled to the amount of two pounds: the pulse immediately relaxed—soft and slow; he seemed faint, yawned frequently; a copious evacuation by stool after the arm was bound up; perspiration general. Evening,—has not slept; appears to be more animated; the lips moist; the thirst abated; perspiration general; the pulse still frequent, but regular and soft; head-ache scarcely felt; the limbs still powerless, but less than they were. October 28th,—slept five hours in the night quietly and calmly; no head-ache; some pain in the calves of the legs, but less numbedness; eye and countenance animated; lips rather pale; skin soft, moist and warm; pulse febrile, but comparatively regular and open; tongue whitish—moist; desire for nourishment. October 29th,—slept well; no pain; skin soft and moist; eye and countenance cheerful; pulse open and free. Evening,—continues to improve: relish for food. October 30th,—convalescent,—walks about the ward and gallery: recovered.

CASE VI.

October 26th, 1813.—Finlay, R. Artillery, had been in hospital for some time on account of a sore on the leg. The sore was healed, and he was discharged to his barrack, but had not entered on duty before he was brought back, viz. on the evening of the 25th, complaining of most excruciating pains and spasms in his limbs, and in all the muscles of the back from the head downwards, of such form and intensity as to resemble te-

tanus, accompanied with peculiar sensations of cold, different from the cold of intermittents—deep and continued, and so excessive in degree that he did not find comfort from a bath considerably above 100 degrees of Farenheit's thermometer: the heart fluttered; its action was interrupted; the pulse was irregular:—æther and laudanum in large dose,—brandy and water. Evening,—somewhat easier; spasms and pains of the hands and feet; confusion in the head and a sense of soreness all over the body still felt; the pulse regular; perspiration copious, but not fluid: æther and laudanum repeated; porter; brandy and water. October 27th,—slept the greater part of the night; the body open; no vomiting; pulse rather irritated: bark, sulphur and valerian to be given in large doses every two hours. Evening,—he was seized with spasms between 11 and 12 o'clock—the spasms of great violence; unusual sensations at heart; severe cramps in the limbs; excruciating tenesmus; twisting of the guts; suppression of urine: expresses a conviction that he must die: æther and laudanum. 2 o'clock,—perspires, the perspiration copious, but clammy and as if extorted by agony of suffering; vomits sometimes; spits often, and lays hold of his tongue as if to remove something from it that is nasty and intolerable in taste; the head confused; the manner peculiar; the form of excitement unusual; seized about 4 in the afternoon with strong spasms, and died in an instant. *The body opened.*—The dura mater shewed no marks of disease, except at the falx where there were some adhesions, but of no great extent: the pia mater was much inflamed and greatly thickened; effusion of watery fluid underneath. The ventricles contained more than the usual quantity of fluid, and a considerable quantity presented itself at the base of the brain. The interior of the stomach, particularly near the cardiac orifice, was very much inflamed,—red, streaked, and speckled; there was no unusual quantity of mucus, and no thickening or separation of the villous coat; the intestinal canal was contracted in some places; the bladder of urine was distended; and the gall bladder was full of yellow bile; the heart was flaccid—flabby as a piece of common flesh.

CHAP. III.

CASE VII.

December 12th, 1814.—A man of the Sappers and Miners, cook to the company, was at parade in the evening and went to bed at the usual hour, in the usual manner. He broke out in the night so outrageously that, being supposed to be drunk, he was carried to the guard-house instead of the hospital. The madness not having abated, as it ought to have done had it proceeded from intoxication, he was brought to the hospital about seven in the morning: he was then furious; the eye was red; he struggled with violence; swore, and prayed by turns; complained of something at his heart. He was bled to the extent of four pounds and bathed in the tepid bath. The fury was somewhat moderated in consequence; the skin was warm; the heat febrile; the pulse small and irregular. In half an hour after he was removed from the bath, the fury returned; he foamed at the mouth, struggled, blasphemed, snapped as if he would bite;—went to convulsion and died at 10 o'clock. *Opened.*—Much blood escaped on removal of the skull cap; adhesions at the falx, numerous filaments extend over the surface of the pia mater. The pia mater much inflamed—interiorily red as a sheet of blood, particularly near the vertex. Water was effused in quantity in all the ventricles, and also at the base of the brain.

CASE VIII.

May 12th, 1815.—A sergeant of the York Chasseurs, on the morning of the 5th, when in the act of shaving, became faint, giddy and speechless,—the face distorted. He was brought to the hospital immediately, and four pounds of blood were abstracted from the arm. He recovered his speech, and said he was very well; but, though he said he was well, he acknowledged that he did not sleep; he could not put his tongue beyond his teeth, as if from want of power; he passed his urine and stools in bed; and, though his answers were generally pertinent during the day, he was often delirious and very unruly at

night. At most times however he was quiet, he lay in one position, took drink when it was offered to him, and even nourishment. The pulse was scarcely febrile—it was without energy and force; the skin was flaccid; the heat nearly natural; there was no distortion of the countenance, or dilatation of the pupils of the eye; and, though the answers were generally pertinent, the intellect was not clear; there was immobility or defect of power. Died on the 12th, and was *opened*.—The membranes of the brain not inflamed; the substance of the brain flaccid; the ventricles large and full of water; a mass of blood and purulence in the centre of the brain of such extent as never before occurred to my observation,—the surrounding substance soft and tending to dissolution. The appearance was altogether singular, viz. a gangrenous abscess in the centre of the brain. It seemed to have commenced suddenly as if by explosion.

CASE IX.

November 13th, 1814.—A man of the Royal Artillery was brought to the hospital to-day, complaining of numbedness of the limbs, particularly of the arms which were tremulous and unsteady. He had slept in the open air during the preceding night, and was supposed to have taken cold. He had no pain of the head, or any material pain in any part: he was bathed in a bath of moderate temperature, an emetic was given, and a considerable quantity of bilious matter was ejected—with relief; the arms were less tremulous: a purgative was also given, and he seemed upon the whole rather better; the pulse low, but regular—not frequent and not weak; the skin moist, but rather damp and unpleasant; the tongue rough, but not foul. November 16th,—became delirious about two o'clock P. M. —says he is to die to-morrow, and intreats he may be permitted to do so as becomes a soldier: the pulse is low, but regular—not much accelerated,—no complaint of pain of the head. November 17th,—unruly in the night; tongue rather foul; little increase of thirst; sweats—the sweat clammy:—fancies he is going to be poisoned. Died about ten o'clock:

CHAP. III.

the body *opened*.—The dura mater considerably inflamed, the interior membrane to a great degree,—the blood vessels on the surface of the brain very turgid; a great number of filaments forming strong adhesions at the falx,—the blood vessels in all parts of the brain turgid, and in many places almost black. An unusual quantity of water in all the ventricles and at the base of the brain. The stomach and intestines not materially diseased.

CASE X.

January 26th, 1815.—A man of the 2nd battalion of the 60th regiment was attacked with fever on his passage from Grenada to Barbados. When he arrived at Barbados, and was received into hospital, he was delirious—the delirium accompanied with tremors and agitation; at times he was sensible, and fever was scarcely perceptible, that is, the pulse was regular and slow; the skin was generally dry; the lips dry and rather pale; the tongue clean, or very little furred; no appetite for food; very little sleep; a dry and irritating cough supervened with a pain in the left side near the back. He died suddenly, as if from suffocation: the body was *opened*.—The brain and its membranes were much inflamed,—the vessels on the surface numerous and distended. A piece of bone, the size of a man's little finger presented itself on the anterior lobe of the brain, near the falx: adhesions at the falx in various places, —extensive elongations of filament and effusions of matter assuming an ossifying process in different places: a great quantity of water under the interior membranes; the lateral, and indeed all the ventricles prodigiously distended with fluid: a great deal of water at the base of the brain; the blood vessels turgid throughout: a large abscess (vomica) in the left lung—recently burst.

CASE XI.

February 2nd, 1815.—A man of the York Rangers, of irregular and dissipated habits, had been ill three days before he

was sent to hospital. He was valetudinary, or cachectic constitutionally. On the 29th of January, he was attacked with head-ache, vomiting, &c. and sent to the hospital to-day. He was bled to the amount of two pounds: the pain of the head abated; the vomiting continued: a blister was applied to the stomach; and, in short, every kind of remedy that could be thought of was employed with a view to allay the vomiting:—they were without effect: the pulse was frequent—not expansive; the skin dry, or damp and greasy; the abdomen somewhat inflated; the tongue red and rough—dry; thirst considerable. February 3rd,—vomiting abated; pulse frequent and small; skin damp and greasy; ideas wander,—perceptions, at least, not clear. February 4th,—died in the night; *body opened.*—The pia mater exceedingly inflamed; adhesions at the falx strong and considerably extended; the falx itself much inflamed—almost gangrenpus in some places: the inner surface of the pia mater red as a clot of blood: water in the lateral ventricles and at the base of the brain in considerable quantity. The lungs solid like liver, compact and impermeable to air in some places; the liver rather bloodless, but no abscess and no apparent change of structure; the inner surface of the stomach speckled like measles, particularly near the cardiac orifice; the inner coat of the colon diseased,—red and inflamed generally.

CASE XII.

April 22nd, 1815.—C——, a man of the York Rangers, having had a slight feverish indisposition was discharged from hospital in apparent good health. He went on duty; and, being observed to droop while on guard on the 20th and not being able to give an account of himself, he was sent to the hospital. The skin was neither hot nor cold; it was flaccid and inanimate; the pulse not energetic; the thirst considerable; the tongue rough; the lips dry; the eye and countenance calm, but dull and torpid; the pulse scarcely perceptible. He died in the night—in about thirty hours after he was sent to the hospital: the body was *opened.*—There were many turgid blood vessels

CHAP. III.

on the interior membranes; adhesion at some places; there was little water in the ventricles,—a great deal at the base of the brain; the substance of the brain itself was unusually flaccid —in a manner liquescent, and so tender that it could not be handled though the subject was opened soon after death. The spleen was a mere clot of blood; the liver sound in external appearance, its interior substance so soft or rotten that it could not bear to be handled without falling to pieces.

CASE XIII.

November 20th, 1813.—A man of the 90th regiment, received into the surgical ward on account of suppression of urine, supposed to proceed from stricture but in reality a symptom of fever, was brought on the medical journal this day. He had been bled and bathed; other things had been done with a view to act on the supposed stricture. There were tremors, agitations, great pain; the skin was withered and dry; the lips dry; the tongue so dry and rough that he could scarcely speak or swallow; the pulse was frequent, small and irregular: ten grains of cobweb were given with a view to procure respite—he expressed immediate ease; the skin became moist and warm; the tongue moist and moveable. Evening,—less agitated than he has been, but the tongue is rough and dry—and he is thirsty: camphire and æther. Cobweb repeated,—expressions of ease; a peculiarity in the countenance indicating the approach of delirium. November 21st,—slept in the night, —less agitated than he has been; tongue dry and rough; respiration hurried at times:—always easier for some time after taking a pill of cobweb; lips rather pale; countenance pale; makes water freely; one evacuation by stool in the night; skin rather clammy; pulse somewhat slower—harder than natural. Evening,—the skin rather cold and damp; the pulse hard and frequent—120; the lips pale; ideas confused; tremor, agitation; body open; tongue so dry that his speech is scarcely understood. November 22nd,—died in the morning: *the body opened.*—Adhesion of the right lung to the pleura costalis, but

no disease of the lung; heart, liver, and stomach sound: no marks of inflammation visible in the brain or its membranes; effusion of fluid under the pia mater, in the ventricles, and at the base of the brain: no marks of disease in the urinary organ.

CASE XIV.

June 5th, 1814.—B——, a man of the R. Artillery, had been for a month or more in a state of mental derangement. He was naturally a quiet and well disposed man, and was first suspected to be wrong from singing almost every thing he said. He did not sleep; he complained of no pain and took food in his usual manner. When I first saw him, he was confined by the strait waistcoat; he was then singing, or pronouncing every thing he said in cadenced rhyme. He was restless and much excited; he then became low, spoke only in a whisper, and at last sunk like a person gradually worn out. *Opened.*—The cortical part of the brain tender,—an appearance of feeble cohesion: the pia mater inflamed throughout; marks of inflammation and cheese-like substance near the falx; unusual redness near the longitudinal sinus; the ventricles deluged with fluid.

CASE XV.

October 24th, 1813.—B——, R. Artillery, seized with a paroxysm of fever to-day; the rigors or tremors severe, and of long continuance; no vomiting, and no complaint of local pain. Bled to the extent of four pounds: warm bath: purging mixture. Evening,—he perspires and is now easier; the tremors abated; he vomited at intervals, and had two evacuations by stool. October 25th,—no sleep; tongue foul; bad taste in the mouth; skin moist—even to perspiration. Evening,—rather delirious; tremors returned; agitation considerable; skin cool and moist; pulse irregular; no vomiting. October 26th,—seized with universal cramp or spasm last night about nine o'clock, and died immediately: the body *opened.*—No marks of inflammation in the brain or its membranes;—

CHAP. III.

more than the usual quantity of water in the ventricles. No marks of disease in the alimentary canal, except that the colon was unusually distended, and that there were a few red spots in the interior of the stomach like the heads of large pins, with a certain quantity of white mucus not having the appearance of a healthy secretion.

CHAPTER IV.

Forms of External Local Febrile Action.

SECTION I.

Ophthalmic Form of Fever.

CHAP. IV.

OPHTHALMIA, or rather an ophthalmic form of fever has been frequent in the British army since the year 1801. It has been more common perhaps among those regiments which served the great campaign in Egypt in the year 1800 than among the other corps of the army; but, though this be true, it would be rash to say positively that ophthalmia, as now known, derives from that origin and is still supported by infections originally imported from that source. The ophthalmic form of fever appears to be sometimes the product of locality;—I cannot pretend, from my own observation, to form an opinion concerning the degree and extent of its infecti-

CHAP. IV.

ousness. A disease which made its appearance under the ophthalmic form, in a troop of Hussars of the corps Hompesch, quartered at a sugar plantation in the plain *Cul de Sac,* in the district of *Port au Prince* and island of St. Domingo, in the month of December 1796, is strongly corroborative of the opinion of its occasional locality. The indisposition alluded to prevailed so generally in this particular troop that few escaped from an attack of it. It in fact appeared to absorb every other disease; and, when the subjects of it were brought to the hospital which was established at *Croix des Bouquets,* a village in the neighbourhood, they often experienced a change in the mode of action, viz. from ophthalmic to dysenteric, and sometimes to intermittent or remittent, more especially where astringent or repellent applications had been made to the eye without previous and copious evacuation. The action of the disease was, in this case, more directed to the appendages than to the ball of the eye; that is, the inflammation was more humoural rather than dry and ardent.—It was this occurrence in the Hompesch Hussars which first gave me the idea of introducing the ophthalmic form into the chain of febrile action; and what I have seen since, in other situations, confirms me in the opinion that it ought to be so placed.

CURE.

Ophthalmia has been so fully described by recent writers that it is not necessary to make any observa-

tions in this place concerning its history. The cure of the recent disease is also so simple that all I have to say upon it may be comprised in a very few words. It depends principally upon sudden depletion by abstraction of blood. Bleeding is now admitted by all army surgeons to be the first and the most important remedy. The introduction of it into the British army, to the extent now practised, is due, if I am not mistaken, to Dr. Borland, inspector of hospitals. The ophthalmia had been a troublesome disease among the British military ever since the return of the troops from Egypt; but it prevailed to such extent in the year 1805 as to occasion considerable alarm; for, if it did not destroy life, it destroyed sight which is tantamount to the life of a soldier. It appeared with violence among some corps which were quartered on the coast of Kent, particularly at Shornecliffe. Dr. Borland, who was then assistant to the inspector General of hospitals, repaired to Shornecliffe, I believe as a volunteer to satisfy himself by actual inspection. After inspection he proceeded to act; and, from a train of well considered experiments, digested a plan of treatment through which it was safely and easily cured. When the efficacy of the plan was satisfactorily established, instructions were sent from the medical board office under sanction of a member of the board, viz. inspector General Knight, detailing the manner of proceeding, and recommending the execution of it to the attention of regimental surgeons throughout the line. Where the plan recommended, the basis of

CHAP. IV.

which consists in bleeding, is applied in time and carried to the proper extent in application, it rarely fails in arresting the disease. On this subject, I do not know that there is any difference of opinion in so far as respects recent ophthalmia: the chronic does not yield to the same treatment; but the chronic is not here under view,—it is not known where the means now recommended have been applied with skill and decision during the early stage.

The ophthalmic form of fever prevails among the troops in the West-Indies, in some situations and in some corps more than others. It was frequent among the soldiers of the 90th regiment, one of the regiments which served in the expedition to Egypt in the year 1800. The plan of cure pursued in this corps was depletion, but the depletion was not always sufficiently prompt and sufficiently extensive; hence the cure was often tedious and not always perfect:—the sight of several was blemished, and few were dismissed from the hospital in less than six weeks.

The ophthalmic form of fever did not often fall under my own observation in its recent stages during the period to which this sketch relates; but it fell under it often enough to prove to me that the cure was not a matter of difficulty, if the plan was well laid, and if the suitable means were applied before the structure of the eye was actually violated. Abstraction of blood is the first remedy, and the remedy of principal dependence; the one, in fact, without which others are of very uncertain effect. The

quantity necessary to assure the arrest of a disease of violence cannot be estimated at less than from three to four pounds; but, whatever the amount may be, the effect must be assured before the arm is bound up, that is, remission from pain and disappearance of red and turgid veins. The disappearance of the red veins indicates that the point is attained, and determines the amount of the measure. When the course of the disease has been arrested by the abstraction of blood, emetics, purgatives, diaphoretics, diluents, blisters to the temples and nape of the neck, equal and well adjusted pressure upon the ball of the eye by compresses wet with camphorated eye water, or acetated water of ammonia during the abstraction of blood, and continued under the operation of all the other evacuating processes, are the principal means which assist in the removal of the symptoms and which prevent their recurrence.

CHAP. IV.

An extreme degree of irritability, a degree so great that the patient cannot open his eye or bear the slightest impression of light, often remains for some time after the appearances of actual inflammation are removed. In a case of this kind, an experiment was made with infusion of the herb euphrasia or eye-bright. The subject, an European sergeant in the 8th West-India regiment, a corps of Africans, had been bled largely, taken emetics and purgatives, and was blistered at the neck and on the temples. The redness of the ball of the eye was removed, but irritability remained

CHAP. IV.

to such an extreme degree that he could not bear the slightest impression of light without intolerable pain. A draught of strong infusion of eye-bright, in quantity about half a pint, was given while he was in this condition. He recovered the power of opening his eyes by his own will instantaneously—even while in the act of swallowing, and he in fact recovered it to such extent as enabled him to look steadily into sun-shine. When the irritability returned, or threatened to return, it was removed by a repetition of the draught.—The herb eye-bright may therefore, I think, from this and other similar experiments, be considered as a valuable aid in the cure of ophthalmia. By help of it, after the inflammatory state is removed by bleeding, and prevented from returning by the judicious employment of emetics, purgatives, blisters, &c. the disease may, if I can venture to speak from limited experience, be perfectly cured in five or six days, while, under feeble and temporizing treatment, it often continues for as many weeks, and even sometimes for as many months.

SECTION II.

B. *Ulcerative Forms of Fever—usually appearing as Ulcer on the Inferior Extremities.*

Eruptions, blotches, or pimples which terminate in sores or ulcers of the lower extremities, often appear among the military who serve in the West-

Indies; and they frequently appear under such circumstances as if they depended on some inexplicable modification in the action of the cause of fever—endemic or infectious. In dry, rocky and hilly districts of interior country, and even on sandy, or rocky and dry eminences on, or near the sea coast, sore legs are a frequent, a perplexing, and sometimes a destructive complaint among European soldiers. In particular places, and at particular seasons, they are so frequent as to be in a manner epidemic. They are little known in the unhealthy months of the year, where intermittent or remittent prevails, and they are little known at the most unhealthy of the sea-coast stations at any time.

The ulcers of the legs, concerning which there is question at present, begin in different manners. 1. The beginning commences as a superficial pimple or blotch, like a very expanded small pock. The cuticle separates, and matter is discharged, ordinarily thick and white, or yellow and well concocted. When this is the case, the surface dries and heals of its own accord, or under some simple application—often in seven or eight days. Others break out, discharge a well digested matter for a few days, and then heal in the same manner as the preceding. And in this manner, pimples or blotches often break out and heal in succession for a considerable length of time, without in any degree impairing the health of the subject. 2. In another, the beginning is marked by the appearance of a pimple—hot and painful from the commencement,

CHAP. IV.

the pain sharp and stinging. The cuticle separates; the discharge is thin, sharp and acrid. The circle of the pimple expands; the edges become red and what is termed angry, with sensations of burning heat, sharp and pungent pain. The ulcerating process commences and extends; the true skin is destroyed; the ulceration penetrates into the adjacent parts with more or less rapidity, affects the membrane of the bone and, on many occasions, the bone itself. The discharge from these rapidly spreading ulcers is sometimes thin and acrid, so as to excoriate by its sharpness, sometimes copious, glairy, dusky coloured jelly-like substance—more or less bloody; the surfaces underneath and even the edges are foul and fungous, or the adjacent parts break down rapidly into a disorganized mass. 3. Instead of a suppurating blotch or pimple—mild purulence and healing disposition, or a foul and ulcerating surface—acrid ichor and rapid destruction of parts, a dark coloured point, scarcely to be called a pimple, sometimes makes its appearance on the leg, discharges a bloody matter, and, in a short time, dark, grumous blood in greater or less quantity,—sometimes pure, sometimes mixed with putrid or dissolved substance in various proportions.—The course of this form of ulcerative disease is rapid—and not unfrequently fatal. 4. Besides the forms now described, which may properly enough be regarded as explosions of the action of a febrile cause on an external part, the ulcerated surface, in whatever

manner it may have begun, not unfrequently assumes a fungous appearance, the centre rises like a colliflower, the edges are thick and callous, the growth unnatural, adventitious, extending widely and progressively so as to become in some degree constitutional.—It has been already observed that the ulcerative form of fever is not common in the less healthy months of the year, where common fever most prevails, nor at the most unhealthy points of an unhealthy sea coast. To this it may be added, that ulcer and formal fever do not ordinarily occur in the same place, much less in the same subject at the same time; but that, when the ulcer has healed, or when it has assumed a healing appearance, fever supervenes not unfrequently, and that it is mild and tractable when it does supervene, or violent and malignant in the last degree of malignancy, according to what had been the character of the preceding ulcer. It was the observation of this and other analogous facts, which induced me to rank the ulcerative form of disease, whether endemic or infectious, as I now do. The propriety of the arrangement may be disputed,—I contend only for the accuracy of the fact as here stated.

CURE.

As I consider the ulcerative form of disease to be a mode of local febrile action, it will occasion no surprise that I institute the plan of cure on the same basis as that on which is laid the proceeding

CHAP. IV.

for the cure of general febrile diseases, subject to more or less modification according to circumstances of condition. 1. It is often necessary to abstract blood from the veins to greater or less quantity, in the mild or blotch form of sore leg, which has disposition to heal of its own accord; also to give purgatives of brisk operation, viz. jalap with calomel or crystals of tartar, salts, tamarind beverage, spruce beer, or other diluting and alterative liquid for drink; to enjoin abstinence from animal food, and to interdict wine or other strong liquid most rigidly. 2. Abstraction of blood presents itself as a remedy in the ulcerative form of fever, whether the discharge from the ulcer be thin and acrid, or glairy jelly-like substance with rapid solution of continuity. The quantity of blood to be abstracted at one time is not, according to my view of the case, of a high measure, but it is often necessary to repeat it at short intervals, with a view to effect some change in the state of the circulating fluids, with which the condition of the ulcer is more or less connected. Besides bleeding, purgatives every other day, and emetics occasionally are among the necessary means towards the effecting of a cure. Animal food and strong liquors, as evidently hurtful, are rigidly interdicted. In the phlegmatic habit, alkalines, viz. muriate of ammonia, acetated water of ammonia, expressed juice of wormwood, trefoil, scurvy-grass, &c. are serviceable as added to the drinks; and in the serous habit, where the discharge is thin and acrid, milk, whey and bland nourish-

ment are the most suitable. In regard to local applications, poultices of herbs or roots, viz. carrot, stinking-pea, roasted limes, lemons, bitter oranges; or the application of the powder of certain roots to the immediately ulcerated surface, particularly rhubarb or bark, often produce favourable changes on the condition of the sore, especially where the discharge is copious, foul and acrid. Bandages of sticking plaster, or rather red-lead plaster applied in the manner first directed by Bayntun, have considerable effect in maintaining the healing process once it is begun, or when the disposition of beginning to heal shews itself. They are of no avail in the rapidly spreading ulcer depending on the cause here assigned; which, besides external application, requires internal remedy, viz. evacuations of various kinds, abstinence from animal food, and frequent ablutions of the limb and even of the whole body with cold salt water. 3. In the form of ulcer which may, with some propriety, be called gangrenous, as there is a sluggish circulation or disposition to stagnation in the venous system, the abstraction of blood to a certain extent evidently presents itself as the principal means of accelerating the movement, and of thereby restoring the due action of life. But though important and indispensable, it requires to be managed with care and circumspection; for, unless it be suitable to the circumstances in its own nature and carefully conducted in application, the effect will be contrary to what is intended to be produced by it. The abstraction

CHAP. IV.

of blood, I consider to be necessary towards the effecting a change of condition in the gangrenous ulcer; but stimulants, both external and internal must be joined with it, so that the object in view be fully attained. Of internal remedies, camphire, ammonia, nitre, bark, vitriolic acid, snake-root, powder of charcoal, tincture of myrrh and aloes as a purgative, are the most important. Of external applications, poultices of yeast,—poultices of carrot with charcoal; and, at an after period, when the surface is somewhat cleaned and the foulness washed off by warm water, pledgits of lint soaked in tincture of myrrh and aloes, or powder of bark laid upon the irritable or ulcerated part, materially conduce to the effecting of favourable changes on the diseased surface. Bandages of soap plaster, applied to the diseased limb under a proper consideration of the circumstances of the condition, will also be of benefit; frequent ablution of the limb, and indeed of the whole of the body with cold salt water, may likewise be ranked among the means of security. These, with suitable diet, viz. acid fruits in quantity, cyder, spruce-beer for drink, wine on some occasions in small quantity, may be supposed to effect such change in the condition of the habit as disposes the ulcer to assume the healing process. 4. In foul and fungous ulcers of long standing, where the condition of the limb is more or less changed by the long continuance of the disease, besides escharotic applications to the foul and fungous surface, viz. solution of nitrate of silver, the envelope-

ment of the whole limb, from the knee to the ancle, by the sticking plaster bandage, applied with such compression as forces the parts gently into new contact, and maintains them steadily in that new situation, particularly as aided by judicious regimen, viz. a diet—spare in quantity and chiefly farinaceous, brisk purgatives every third or fourth day, occasional abstractions of blood in small quantity, frequent ablutions with cold water, or bathing in the open sea where the sea is contiguous, rarely fails to effect a cure in a comparatively short time, I think I may venture to say within six weeks, unless where the disease has reached to the membranes or substance of the bone itself, in which case neither time nor consequence are within calculation.

Such is the outline of the plan of treatment recommended for the cure of ulcers of the legs among European troops serving in the West-Indies. It is different in some respects perhaps from that which is more commonly pursued; but, if we permit ourselves to be influenced by fact and directed in our proceedings by a consideration of the reason of things, we cannot hesitate long where to choose. Full diet, wine, porter, bark and tonics, with a view as it is said of supporting the system under the discharge of a sloughing or gangrenous ulcer, constitute the more common means of treatment. Such means are not calculated to induce a change in the condition of the habit on which alone the propitious healing of the ulcer depends; on the contrary, if the principle on which I act be founded in truth,

CHAP. IV.

they are expressly calculated to foster and augment the material of the disease; and, if we examine the returns of hospitals where the ulcerative form of fever has prevailed, the history of the fact brings us near to the conclusion which is assumed.—Where the sore leg prevails as a temporary endemic among a given number of troops in a particular district of country, the most direct and effectual remedy consists in removing them to a situation where such form of disease is not known, or known only as a contingence;—and, from this change of climate alone, it is that old sores often heal of their own accord during the passage from the West-Indies to Europe.

NOTE TO TABLE I.

CORRECT returns of the sick of armies or other classes of the community, continued through a series of years, cannot be otherwise regarded than as documents of importance. They not only afford information to physicians on the subject of health and disease, and relative mortality among diseases; but they supply materials of great and accurate value for the calculations of statesmen and generals, whether the calculation relate to productive domestic labour, or destructive foreign war. The annexed return, No. 1, comprehends a period of twelve years of hospital record in the Windward and Leeward island station; the first nine under the superintendence of four different inspectors, three of whom are still living; the last three under that of the author. Fever, in one form or other, was the reigning malady during the whole period. The manner of conducting the cure of it fluctuated variously between the years 1803 and 1812, but I do not pretend to know accurately the limits and degrees of the fluctuations; nor can I form any very distinct opinion concerning the effect produced by the different modes of treatment that were adopted. The practice was directed at one time through the general principle of stimulation—effected by wine, opium, high measure of diet, bark and other tonics; at another, through evacuations, effected by emetics, purgatives or diaphoretics; at a third, through subtraction of heat, effected by application of cold, viz. affusion of cold water on the naked body; and at a fourth, (upon the whole the most extended and general,) through what may be termed substitution, viz. substitution of mercurial action for the action of fever. Such is the outline of the differences of practice which obtained in the hos-

pitals during the period alluded to, in so far as I have been able to ascertain them by examining the case books, preserved at Barbados in the office of the Inspector of hospitals for the Windward and Leeward island station. I conclude that the medical means prescribed during this period were prescribed with consideration according to the view which obtained at the time, and I have good grounds to believe that they were applied with care, and generally administered under a rule of strict economy. The deaths, in proportion to the numbers of the sick, were more numerous, as appears by the returns, in one year than in another, in one station than at another, and in one corps than in another; but the differences of effect, under these differing circumstances, are not so characterized that it can be safely said in what degree they were connected with different modes of treatment. The precise cause of the variation is thus unascertained. It cannot be said positively, whether stimulation or depletion, subtraction of heat by affusion of cold water, or salivation produced by the action of mercury were the most successful means of curing fever; but this we may venture to say that, from the general uniformity, or mere contingent variation in the results during the different years of the period, no system of treatment was discovered, at least generally enforced, which could be considered as commanding.—The benefit derived from the abstraction of blood, in the cure of tropical fevers, was known to many army surgeons long before the year 1812. Bleeding was actually carried to considerable extent by some of them in the first nine years of the return annexed; but it was not adopted as a general remedy, nor was it so adjusted, where adopted, as to produce any striking change in the general return of dead. The practice was introduced with advantages in the year 1812, and it was more generally adhered to from that time until the year 1815 than it ever had been in the West-Indies, or perhaps in any part of the British dominions, more especially among the regimental surgeons who belonged to the garrison of Barbados, which was then the head quarters of the army.

The person who receives the commission of regimental surgeon is supposed to be competent to the discharge of his duty

in all its latitude, consequently the army physician, or the inspector of hospitals who is appointed to superintend the medical concerns of the military, is not, or does not conceive himself to be authorized to offer professional instruction with regard to the treatment of ordinary diseases. It would be deemed arrogant and presumptuous to attempt it; and it would not be beneficial to the service to enforce it. But though the inspector of hospitals be not authorized, by commission, to dictate what is to be done in the way of medical treatment, he is authorized, or rather obliged by the nature of his office to exact an account of what is done, medically as well as economically, from the officers of all the hospitals which are placed within his station.

The professional opinions of the author of this work, though not very current, are before the public, and they are perhaps more known to military surgeons than to others. They are said to be peculiar and obscure, and are therefore little studied. The author believes them to be true; and, if understood, he confidently believes they might be useful to the practitioner; but he had no authority from commission, and, notwithstanding the predilection which a man naturally has for that which belongs to himself, he felt no inclination from other motive to enforce attention to them through any other influence than what they might owe to their own merits. The medical mind may be enlightened; but it must find the light by its own observation, and digest the observation by its own reflection in order to make it available:—it cannot be commanded. Impressed with this idea, the writer of the present sketch abstained from offering medical suggestions to the medical officers who were placed under his superintendence in the Windward and Leeward island station at the commencement of the year 1812, trusting to time and chance for the opportunity of bringing under their notice the material of the evidences upon which he had himself formed his opinions, and which he believed might so operate as, in process of time, to influence the opinions of others. It is within the authority of Inspector of hospitals to direct that histories of the more important cases of disease be carefully taken down by regimental surgeons, and

that the remedies prescribed, the conditions under which they are prescribed, with the visible effects which they produce on the condition of the disease, be correctly recorded for the Inspector's information. This, as comprehended in the Inspector's duty, was ordered to be done; and it was moreover ordered, in the event of the disease terminating fatally, that the body should be opened, the appearances observed on dissection noted, added to the history of the case and transmitted to Barbados with the monthly return. The regulation alluded to, (which was issued and sent to the different stations at an early period in the year 1812,) opened a field of observation to regimental surgeons, implying at the same time as high a degree of responsibility for the exercise of their talent and observation as could be contrived, or exacted from a medical officer. The injunctions given, I have the satisfaction to say were attended to, and I think I have reason to believe that some change was introduced into the then prevailing method of treating febrile diseases from the lights thence derived, without doing violence to opinion through any other means than convictions arising from the reflections of the individual himself. The regimental surgeon had here the opportunity of seeing, in the dissection of the dead body, the ravages committed on organic structure by diseased action, and it may be reasonably supposed that, instructed by the example of what he saw, he sometimes gained knowledge, or was led, by reflecting on the materials which were placed before him, to such a view of principle as might safely form a basis for his future professional proceeding.

The comparative return, No. 1, though not without usefulness, is not fully instructive as a medical return. It gives no more than a general view of results, viz. proportion between discharges and deaths, with the amount of the decrease by death in the strength of the military force in the different stations, and in the whole command during a given period of time. The amount of the mortality, as appears by the return, sunk considerably in the European part of the force through the whole of the Windward and Leeward island station during the last three years of the return, but it sunk more remarka-

bly at Barbados than at any other; and, remarkably as it was reduced at that place, there are grounds to believe that it might have been reduced still farther, if the chief medical officer had possessed the power of commanding every thing for the department that was necessary to forward convalescence and assure stability of recovery. But, while decrease in the amount of mortality is conspicuous in the latter years in the European force, the same fortunate change is not visible in the African. In the earlier period of the return, No. 1, sickness among the black troops appears to have been trifling, and mortality was on a very low scale; in the latter period, the quantity of sickness increased, the proportion of deaths to discharges is high, the annual loss of the strength by death formidable. The fact stands on record; and, as it was not to be expected from the boasted improvements of the economical arrangements of the present day, it would not be unworthy of the consideration of the higher powers of the state to institute an enquiry into the cause of it. The difference is striking. It cannot exist without a cause of moment; and it cannot, at least it ought not to be passed over without investigation. I cannot speak from actual knowledge of the physical qualities of the persons who filled the ranks of the black regiments at the earlier periods of the annexed return; but difference of loss, by disease, gives ground to believe that they were different from those of the present. The black recruits, admitted into the lists of the army between the years 1812 and 1815, fell under my personal observation, and I am free to say that a small portion of them only were such as I would have selected for soldiers. Some of them were collected in Africa by an officer expressly appointed for the purpose of recruiting; but they did not appear to have been well chosen,—and they were but few in number. The majority of those admitted into the army, during the period to which my knowledge extends, were prize negroes, plundered or purchased as slave cargoes on the coasts of Africa by Spaniards, Portugueze, or others. They were intercepted on the passage to their destinations by the cruisers of the British Navy, carried into British ports, tried in British

courts, condemned as contraband, and, when condemned, sold wholesale by the captors to the British government for soldiers. They were thus of all ages as cargoes of slave ships usually are, at least from seven years of age to forty or upwards—and, as such, they could not all be supposed to be fit subjects to carry arms.

I am not acquainted with all the arrangements which relate to the recruiting of the black corps, and I am unwilling to misrepresent them:—what is now stated is ostensible. The government will, it is to be hoped, consider the subject in all its bearings, for the mode of filling the ranks of this description of force is not, as it strikes the ordinary observer, a measure that is well considered. In one view, there is waste of money in purchasing a commodity which cannot be available for its purposes in less than five or six years, even sometimes more; and in another, and still a more important one, there is an apparent violation of the act of the legislature which blazons British justice and humanity in all parts of the world; for, as the case stands at present, the African, liberated from the hoe with one hand, is chained to the firelock with the other—for life and without option of choice. The act is deemed gracious, and, in courtly phrase, it is termed emancipation; it is an act of force in reality, and, translated into plain English, it is spoiling the robber and appropriating the spoils.

NOTE TO TABLE II.

THE strength of the different corps comprehends rank and file and non-commissioned officers, viz. all persons who, when sick, are received into hospitals. The strength of the troops in garrison is given as it stands on the 20th of every month; the amount of the sick list, and the proportion which the principal forms of disease bear to the sick answer to that date. Accidents and complaints which lead to no consequence, though included in the gross list of sick, are not included in the detail —an omission which explains the want of correspondence between the figures of the state and movement; it is done with a view to avoid the multiplying of columns of no useful inference. It is thus that the principal forms only are extended in detail,—such as may be supposed to depend on the action of a general cause, whether in its primary or secondary stage of action. The cachectic column of this return includes all forms of chronic or degenerated disease, viz. dropsy, obstructed viscera or what is termed debility, &c.—The second battalion of the 60th regiment, being an entire corps, stands in a line by itself; the other troops in garrison, including the Artillery, are comprehended under the head of detachment.—The African corps has a line for itself.

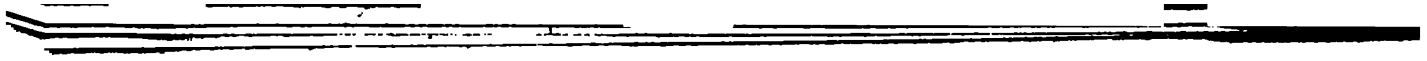
The proportion of the European sick to the total European strength stands, for the year 1811, as one to ten; the proportion of febrile forms to the total sick list, as one to five nearly; of dysenteric, as one to two and six-sevenths; of pneumonic, as one to eighteen and a half; of hepatic, as one to two hundred and thirty-six; of rheumatic, as one to sixty-eight and a half; of ulcerative, as one to eight; of cachectic, as one to

twenty-seven and two-thirds.—The proportion of deaths to discharges from febrile forms stands, as one to six and one-third; from dysenteric, as one to eleven and a half; from pneumonic, as one to seven and one-third; from hepatic as one to sixteen; from cachectic, as one to three and a half; from the whole, as one to eleven and two-thirds; the annual loss of the strength, as one to six and five-sixths.

The proportion of the African sick stands to the total African strength, as one to thirty-two; the proportion of febrile forms to the total sick list, as one to ten; of dysenteric, as one to three and one-third; of pneumonic, as one to seventeen and two-thirds; of rheumatic, as one to one hundred and two; of ulcerative, as one to four and one-third; of cachectic, as one to thirty-one.—The proportion of deaths to discharges from febrile forms stands, as one to twenty-one; from dysenteric, as one to ten; from pneumonic, as one to three and a half; from cachectic, as one to four; from the whole, as one to twelve and two-thirds; the annual loss of the strength, as one to seventeen nearly.

Abstract of Monthly Returns of the Sick of the Troops—European and African of Barbados in the Year 1814.

	DESCRIPTION.	STATE ON THE 24th OF THE MONTH.									MOVEMEN				
		Strength.	Amount of the Sick List.	PRINCIPAL FORMS OF DISEASE.							*Febrile.*		*Dysenteric.*		*Pn*
				Febrile.	Dysenteric.	Pneumonic.	Hepatic.	Rheumatic.	Ulcerative.	Cachectic.	Discharged.	Died.	Discharged.	Died.	Discharged.
January 24th.	R. Artill. and Sap. & Miners	542	40	3	11	2	—	—	11	1	18	—	43	—	1
	4th Battalion, 60th Regiment	490	24	5	5	2	—	—	5	—	18	—	9	—	
	———, 90th ———	355	31	6	10	5	—	—	3	1	6	—	12	—	
	Royal York Rangers	668	62	11	8	6	1	—	10	1	26	2	41	—	
	Detachments	115	7	2	1	1	—	—	—	—	7	—	1	—	
	Total European	2170	164	27	35	16	1	—	29	3	74	2	106	—	2
	8th W. I. Regiment, African	827	59	7	9	15	—	—	6	—	13	—	20	—	2
	R. Artill. and Sap. & Miners	489	32	5	8	2	—	1	5	1	16	1	15	1	
	Detachments	107	6	4	1	—	—	—	—	—	—	—	—	—	



NOTE TO TABLE III.

THE European garrison of Barbados, for the year 1814, consisted of wings of corps as marked in the margin—under the immediate charge of regimental medical officers, and of detachments of different corps—under the care of the staff physician and staff surgeon. The European sick stands to the total European strength collectively, as one to thirteen; the proportion of febrile forms to the total sick list, as one to five nearly; of dysenteric, as one to four; of pneumonic, as one to ten; of hepatic, as one to one hundred and fifty-five; of rheumatic, as one to seventy-one; of ulcerative, as one to seven and a half; of cachectic, comprehending degenerated forms of acute disease, as one to forty-nine nearly.—The proportion of deaths to discharges from febrile forms stands, as one to forty-one and one-third; from dysenteric, as one to thirty-two and two-thirds; from pneumonic, as one to fourteen and a half; from hepatic, as one to two and one-fifth; from cachectic, as one to five and one-third; from the whole, as one to thirty-six and two-thirds; the annual loss of the strength, as one to twenty-five.

The 8th West-India Regiment (African) was the black corps in garrison at Barbados during the year 1814. The proportion of sick to the total strength stands, as one to twenty-two nearly; the proportion of febrile forms to the total sick list, as one to nine and one-fifth; of dysenteric, as one to nine nearly; of pneumonic, as one to six and one-quarter; of rheumatic, as one to eleven and two-thirds; of ulcerative, as one to nine; of cachectic, as one to fifty-three nearly.—The proportion of deaths to discharges from febrile forms stands, as one to sixty; from dysenteric, as one to thirty-four; from pneumonic, as one

to eight nearly; from cachectic, as five to one; from the whole, as one to twenty-five and one-third; the annual loss of the strength, as one to twenty-two nearly.

CONCLUSION.

THE preceding sketch of the history and cure of fever, though imperfect in design and hastily thrown together, contains information on the subject of febrile diseases which, in the author's opinion at least, is not unimportant to the interests of medical science. The materials, from which the volume is formed, are authentic, in as much as they are drawn direct from the original; and they are ample, as collected during long experience in varied scenes of service. A better method of arrangement would have made the work more available to purposes of utility, and more skill in the art of composition would have made it more acceptable to the taste of the public. But, imperfect in design and deficient in manner as it may be, the record of the fact is faithful, and those who study and wish to understand the history of disease as it really is, and who desire at the same time to be informed of safe and decisive means for effecting its cure, may, it is presumed, draw something from it not undeserving of their attention: the practitioner of routine will receive no assistance—he cannot perhaps apply to it with safety.

The medical office, though it does not stand high in the opinion of those who sway the sovereign power of states, had notwithstanding something generous in its origin, and it still perhaps has something useful in its act. It is in truth one of the most useful of the arts which have been discovered by human genius, and one of the most important of the offices which can be exercised by a human being. Next to purity of mind, health of body is the greatest blessing possessed by man; and, as the possession of health is of high value, the persons who contribute to assure the continuance of it, or to restore the efficiency of it when it is impaired or contingently lost, though they work for hire and deserve no credit on account of generosity, are notwithstanding useful and entitled to consideration on the score of utility. If the medical art be a reality —a science and not a pretension, it presents itself as an important part in the machinery of political arrangement in whatever view the subject be taken, whether as conducing to maintain national independence, or to aid in the acquisition of national wealth and attainment of national pre-eminence. No individual can labour and produce revenue whose health is broken or destroyed; and no nation can attain power, or long maintain an independent station against the encroachment of others, where its members are deficient in the strength and vigour which depend on bodily health. This is a self-evident truth; but it does not appear to have struck the legislators and rulers of nations with true force. The

conservation of the health of the people is not a national concern in any country in Europe, at least in any of the greater kingdoms. Health is there left to the individual's own care; and, so left, it is ordinarily neglected,—the application of medical means perverted from due effect through the self-will and prepossession of one class, or rendered void and useless through the indigence and misery of another to whom they are applied. This relates to the mass of the people or great body of nations:—there are classes which form exception.—When princes, who are invested with official power for national conservation, become smitten with the desire of extending power on their own account for purposes of aggrandizement, they collect masses of men and form armies as instruments through which they expect to attain their object. To the health of the instrument so formed, more or less of systematic attention is usually given, particularly in recent times. The care thus directed has a specious, even a reasonable foundation. Capacity for military duty depends upon bodily strength, and strength depends upon the possession of bodily health; consequently the provision of medical assistance, with a view to assure the efficiency of the instrument in the various scenes of service to which it may be carried, cannot be other than a matter of importance to statesmen; and it is obviously under such impression that medical establishments have found a place among the provisions of military sovereigns, for the purposes of foreign war.

The medical establishments of European armies, in modern times at least, are magnificent in their equipments. The promise of good which they hold out imposes on the superficial observer; the actual good which they produce is seldom realized in trial. The quantity of human life sacrificed to the strife of kings is prodigiously great; but a small part only, comparatively speaking, falls by the instrument of open war. Disease is the destroyer; and, though it may appear paradox, it is literally true that destruction is generally greatest where medical establishments are most magnificent, at least where they are most extensive, and where they obtain a military organization of the most boasted perfection. Sickness is usually greater in armies, in proportion to the number of individuals, than it is among the inhabitants of the countries in which the armies are quartered, or in which they serve. The difference, which is striking, is commonly supposed to arise from increased hardships of military service: it is not proved by good evidence that it is so. The sufferings of soldiers I am ready to admit are often extreme; but they belong to bad arrangement, not to the nature of things. To troops well organized and well conducted, real military hardships are of rare occurrence, even in the severest campaigns of severe warfare. The assertion is not made at random: experience is ample on the subject, and the inference is conclusive, the most active and apparently the most exposed parts of armies being almost uniformly the least sickly in

sickly times. But, if sickness be proportionally greater among military than it is among peasantry and artisans, mortality from sickness, in military general hospitals, often greatly exceeds the mortality which takes place in the other and less magnificent receptacles of the same description of sick. This is known to every officer of observation—military or medical who has accompanied armies in the field; and it is farther known, and has numerous examples of proof in various scenes of service that, where the chain of the constituted medical arrangement is broken through necessities so that reliance is no longer placed on general hospitals for the cure of diseases, the gross amount of the sick of the army, in want of this ordinary and falsely supposed indispensable provision, sinks—probably from one in three or four to one in ten or twelve, and, what may be thought still more surprising, the decrease in the mortality, relatively to numbers, bears a corresponding decrease with the diminished amount of the sick. The fact is true, and the main cause of it is obvious, viz. speedy restoration of health by the prompt application of remedy from the hand of the regimental surgeon.

The history now given, though paradox, is literal fact; and the source of the fact, if we take the trouble to search into causes, is not of difficult discovery. The medical establishments of the greater number of European armies present themselves with a show of exterior magnificence; but the structure, when

analyzed, does not evince the marks of being laid on a basis of medical science, and, if not so laid, there is no cause to be surprised if the medical effect be not found in trial to be such as is promised. No person, who opens his eyes and who permits himself to reason on what he sees, will pretend to deny that intimate knowledge of animal structure, with a correct estimate of the laws of its movement, is a necessary knowledge for those who assume the task of arranging materials into a military fabric, for whatever purpose that fabric be intended. There is difference between appearance and reality in most things; and here, as in other things, just arrangement cannot be made according to exterior resemblance, for that is deceptious of real quality; nor can the act, when the arrangement is made, be rendered effective of purpose by the application of external force, for that contingently counteracts the constituent power of nature. The military tactician does not, even Frederick of Prussia, the idol of the military, did not, in forming a medical establishment for the repair of his shattered and broken instruments, study to acquire a knowledge of the intimate nature of things. He adhered to his fundamental rule, put his pieces together by exterior resemblances, endeavoured to maintain them in their places by constraint, and to urge them to their duties by force. The parts acted; but the act jarred, and the effect, as a medical effect, was void.

The military principle centres in power, the mi-

litary act, whether the impulse be ambition of conquest or cupidity of spoil, moving in all its steps under calculations of physical force. The military mind aspires, and aspires only. It does not look inwardly upon itself, and it has no prospective beyond a visible point, viz. accumulation of force to bear down resistance, that is, to balance force against force with a view to attain preponderance. The soldier who is sick cannot be thrown into the scale so as to give weight in the balance; hence useless, even onerous, and offensive to the eye which delights in uniformity, he is sent to the hospital for repair as the broken firelock is sent to the armoury. The repair of health belongs to the province of the medical officer; but the medical officer is not sovereign in his office, consequently not master of his act. The military power commands, and the military principle does not give confidence to others than members of its own class. It follows, as a consequence of this principle, that the execution of medical duty is placed under the superintendence of a person of the military corps, superior in rank and command to the physician, and it necessarily results, from this proceeding, that the spirit of medical science is repressed, if not extinguished and lost. The hospital duty submits to the rule of the parade: it is executed regularly, but it is executed in routine, under the general direction of a person who has not, and cannot be supposed, in the reason of things, to have knowledge of that which he directs; it is not necessary to say how fruitless the labour.

Such is the outline of the medical system which appears to be acted on by the greater number of the great European nations. The medical history of war pronounces very unequivocally the error of the arrangement. Mortality is almost always greater in military general hospitals in proportion to numbers than it is in other receptacles of sick. The fact is notorious, and the causes of the fact are not difficult to be discovered. The following are the principal, viz. 1. Neglect, or suspension of medical effort in the early stages of disease during transport to a distant hospital: 2. Contamination of air through accumulation of diseased subjects in ill ventilated apartments: 3. Influence of personal infections, connected with a corrupted atmosphere, generated artificially by injudicious and unavoidable accumulation: and, 4. Military superintendence which, by prescribing the discipline and mode of executing medical duty, reduces the medical officer to a degraded and distrusted menial, annuls the exertions of mind, diminishes, or takes away the reward of labour, viz. the feeling of kindness and humanity—the surest bond of a physician's attention. Medical duty performed under military direction in general hospitals, and total abandonment of the sick are two extremes. I do not pretend to state the precise difference produced in the columns of mortality in the two cases; but I may venture to say that the favourable balance generally stands on the side of abandonment, provided the subject, so abandoned, be not at the same time precluded from the refresh-

ment of the common air of heaven. That the medical art be available to the purposes of a medical establishment, the mind of the physician must be sovereign, influenced to act by the dictate of conscience alone. If competent in knowledge and empowered by authority to command all the means which conduce to the effective operation of his art, he may do something: if he has not skill, discretion, and power, he will do nothing, or less than nothing. The appointment of a person, deficient in knowledge or zeal to the important trust of army physician, implies error in those who appoint; but, if the error exist, it cannot be removed by mandate, or much amended by the superintendence of a military commandant. The physician, who studies his profession for the sake of professional science, attains as high a point in the scale of intellect as perhaps any of the sons of men. He labours in the best field, and, having the opportunity to see truth without disguise, he learns to estimate things by reality—not by appearance.—As such, he will not contend for precedence at a feast, nor experience chagrin that he is stripped of the badges and fopperies of military dress. But, though indifferent to superficial decorations and artificial honours, he cannot be indifferent to the act that places the execution of his duty to the sick under the superintendence of a military officer, who cannot be supposed to be judge of any thing beyond mechanical form and regularity. Where this ob-

tains, the value of the medical art is not understood; its professors are insulted, and I may venture to say that, so restrained, they may be withdrawn from armies without detriment to the service.

FINIS.

PRINTED BY
T. AND H. EELES, STOCKTON.

